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THE RISE OF RUBBER AND FABRIC SHOES.

RUBBER, THE GREAT SUPPLANTER, is making as remarkable headway in the footwear field as it has made in many other lines of manufactured goods. Time was, for example, when all fire hose and all belting was of leather. Now all fire hose is of rubber and fabric, likewise most belting. Rubber is constantly entering new fields—often with difficulty, fighting its way into favor and eventually, through superiority, economy or both, supplanting or partially supplanting its rivals.

As most innovations gain momentum slowly, so it was at first in introducing rubber and fabric shoes for general summer wear. The merits of the early so-called "tennis" shoes for athletic sports and outing purposes were quickly recognized and a large annual output resulted. These shoes were efficient and economical, but not attractive to the eye. Then came the perfection of leather-topped fiber soles and heels, whereupon rubber men began to foresee the unlimited possibilities which this development opened up. High and low shoes of many styles for men, women and children were quickly brought out with duck uppers of several colors, and by the application of welt construction, Louis heels, and ornamental bows and buckles, a new type of pumps, Oxfords and Bals was produced that combined style, comfort and serviceability with moderate cost. Heavy waterproof work shoes for both indoor and outdoor wear were also placed on the market at $2.50 to $3.50 per pair.

Only the sales problem of bringing about the general adoption of the new footwear appeared to remain. The shoes would have sold on their fine appearance alone but for the skepticism and conservatism of human nature. Advertising did much, however, and the trade was growing satisfactorily at the outbreak of the war. Then came the leather shortage and increasing wages, and prices began to soar until at present high-grade leather shoes for both men and women that formerly sold at $5 to $10 per pair are now bringing nearly three times those figures.

Persons obliged to combat the rising cost of living turned to the new footwear and found it as durable as it was attractive and learned through experience that the claims of greater summer comfort were not overstated. To-day the rubber and fabric shoe is the most popular hot-weather footwear in the world. Millions of persons are wearing it and the demand is constantly greater than the supply, despite ever-increasing manufacturing facilities. This, however, is but a beginning. All-weather footwear made by great rubber factories is already popular. The problem has become one not of sales but of production. The new footwear may never completely supplant leather shoes, yet this development of the rubber industry promises to become second only in magnitude to that of the rubber tire.

WORLD STANDARDIZATION OF WEIGHTS AND MEASURES.

ONE OF THE MOST PECULIAR ANOMALIES in history is the fact that the weights and measures of Great Britain and of the United States are German, whereas those of Germany are British. The British pounds, both sterling and avoirdupois, originated with the old German Osterling Hanseatic League, which controlled the trade of England for hundreds of years until ousted by Queen Elizabeth. The Germans forced these old standards on the British, who in turn imposed them on the American colonies. But the remarkable fact is that, despite their absurd complications, they continue in use among the English-speaking peoples, although as long ago as 1871 Germany adopted the simpler decimal system of weights and measures invented by that great Briton, James Watt, in 1783.

Just as all the world has adopted the alphabet of letters for written expression, each people in its own language, and the Arabic numerals for mathematical computation, so there is need of a universal scheme of weights and measures such as the metric system affords. To-day America and Britannia are the only civilized nations that have not adopted this system and thereby find themselves in the strange position of lagging behind the march of

progress. That their foreign commerce is greatly hampered by failure to scrap these obsolete standards is obvious, and that both must eventually accept the new order of things cannot be doubted.

With its raw material produced in the tropics and manufactured in the temperate zones, the rubber industry is of such a pronounced international character that it would unquestionably be benefited by universal employment of the metric system, and the American rubber trade at least will probably lend its hearty support to the campaign for adoption by America and Britannia being waged by the World Trade Club of San Francisco.

PAY FOR RUBBER PLANTATION LOSSES.

ANTICIPATING THE LIKELIHOOD of early Congressional action on the Mexican problem, the National Association for the Protection of American Rights in Mexico is circulating blank forms on which owners of Mexican property who have suffered loss through revolutionary activities may summarize their claims against the Mexican Government for presentation to Congress by the association.

The information sought on which to base claims includes description and location of property lost, destroyed, damaged or confiscated, and how; the names of the faction responsible and of the leader of the party, also the amount of the claim.

Full particulars are asked regarding all American citizens killed or injured and regarding all American women and children outraged. Corporations are asked to state the number of male and female stockholders and the amount of money paid in by stockholders.

The losses of the American rubber interests in Mexico will alone make a large total. Hundreds of thousands of acres of rubber plantations have of necessity been abandoned and buildings destroyed. Claims for these losses should be satisfied.

THE EMPLOYMENT MANAGER.

EMPLOYERS have come to recognize that the science of hiring men and keeping them requires an expert with as keen an intelligence as is demanded in the sales or purchasing department. Selecting the proper man for the proper place, grading employes according to their capabilities and starting them out with the realization that loyalty to the firm will be recognized as a prerequisite to advancement are essential qualities in the makeup of the employment manager. One who possesses proper qualifications is invaluable in any industrial establishment and given a free hand can make his department of the first importance. In dealing with the men he must have not only a few simple rules of procedure, but a knowledge in detail of the requirements of the work and the fitness, ability and adaptability of the help.

Once hired, a man should be kept unless experience demonstrates absolute unfitness or lack of adaptability. Ceaselessly the employment manager must see that the little causes of friction which constantly arise in the conduct of a shop or factory are ironed out quickly and quietly. Tact in dealing with political, religious and racial questions is also a prime requisite. When it is necessary to transfer a man from one department to another, the reasons therefor should be noted as a guide to the future.

There is, of course, such a thing as too much efficiency, so much that the human element is lost sight of. If the employe comes to feel that he is but a cog in the great machine, a unit in a card-indexing system, the very object for which the employment manager is working may be defeated. There is no definite standard by which an employment manager can regulate the conduct of his department, but a careful checking up of results at the end of a year will show whether he has been successful or not. His job is in a class by itself, requiring a combination of experience, diplomacy and knowledge of human nature, second only to the head of the administration offices itself.

PATENTS UNDER THE PEACE TREATY.

OF MUCH MOMENT to the rubber and allied industries is that section of the peace treaty which provides that Americans who were prevented during the war from patenting their inventions or registering trade-marks in Germany or other signatory countries may now do so within six months after the treaty became effective. Patents may be renewed in Germany or any of the other signatory countries by fulfilling the requirements of the war period beginning August 1, 1914.

The licensing and liquidation of German-owned American patents by the United States during the war are recognized as valid and remain effective. Germany waives the liability of the United States for infringement, but the right of Americans to sue for infringement during the war by the German Government or German individuals is not waived. A list of the alien enemy rubber patents available under license was published in THE INDIA RUBBER WORLD, July 1, 1919.

Had Germany been able to procure the amount of rubber she required, the number of American infringement suits would doubtless have been considerably increased.

AMERICAN SHIPS LOADED WITH GOODS WILL SOON SET sail for Germany. England and France have already issued permission for trading with the Teuton. The much-talked-of boycott therefore falls to the ground. If one sells to Germany, one must buy from Germany, which is of course sensible and unavoidable.

THE CORN PRODUCTS REFINING CO. AT ITS GREAT plant at Argo, Illinois, will, hereafter, refuse to employ any who do not speak English. Some 700 aliens, said to be I. W. W.'s, will be dropped through this ruling. Tickets to Russia and a speedy bon voyage would be an added relief.

The Sumatra Plantation of the United States Rubber Plantations, Inc.

THIS IS A GENERAL VIEW OF THE HOSPITAL AT THE SUMATRA PLANTATION OF THE UNITED STATES RUBBER PLANTATIONS, INC., WHERE EMPLOYES RECEIVE THE BEST OF MEDICAL ATTENTION.

AN EXAMINATION of the statistics of the rubber industry reveals the singular fact that while America is the largest consumer of rubber in the world and has invested millions in the manufacture of rubber goods, the amount invested in the actual production of crude rubber is comparatively negligible. The vast rubber manufacturing industry of the United States is almost entirely dependent on supplies from foreign producers. That this state of affairs will not long continue is shown by an increasing interest in planting, and certain representative rubber men have not been slow to seize the exceptional opportunities granted by Sumatra for their capital and energy.

Few great American enterprises in foreign lands have so much interest for American citizens as the big rubber plantation of the United States Rubber Plantations, Inc., in Sumatra. Far away on the other side of the world, in the midst of Oriental conditions, lies this great rubber-growing tract, a project developed by Yankee genius and Yankee capital.

THE NATIVE PATIENTS ARE PROVIDED WITH EVERY COMFORT AND EXPERT MEDICAL ATTENTION, HERETOFORE UNKNOWN IN ORIENTAL HOSPITALS.

EARLY DEVELOPMENTS.

The Sumatra plantations of the United States Rubber Plantations, Inc., first came into existence in 1910 under the name of the Holland-American Plantation Co., a subsidiary of the General Rubber Co. of New York, which is also a subsidiary of the United States Rubber Co.

After a thorough investigation by well-known plantation experts of the possibilities of successfully growing rubber in the Far East, it was decided that the northeastern shore of Sumatra, a Dutch island, offered by far the most favorable conditions.

In May, 1910, the Soengei Sikassin estate was bought and subsequently ten other contiguous estates were acquired until the company owned in one piece of irregular shape a tract comprising 81,000 acres, or some 133 square miles, measuring 30 miles across its greatest length and 20 miles across its greatest width. This tract is only 17 miles inland from the port of Tandjong Balei Bale and 105 miles south of the city of Medan,

THIS IS ONE OF MANY WEEDING GANGS, COMPOSED OF MEN AND WOMEN EMPLOYED ON THE PLANTATIONS, FOR WEEDING YOUNG TREES.

a place of 27,000 inhabitants. From the outset it had also the advantage that much of it had already been cleared and well drained for tobacco growing and that more than 175 miles of good roads had been built.

THE BEGINNING OF PLANTING.

Planting was begun in June, 1910, only a month after the initial purchase, and the speed with which it was pushed may be inferred from the fact that by the end of the year 15,000 acres had been planted with growing trees. By the end of 1913 about 34,000 acres, or over 53 square miles, had been planted with *Hevea brasiliensis*. The trees were planted nineteen feet apart each way, 121 trees to the acre, with the view of bringing 100 trees per acre into bearing.

THE FACTORY OFFICES ARE HOUSED IN A BUILDING OF MODERN CONSTRUCTION.

The company also acquired two detached estates, one at Langkat and the other at Si Pare Pare. These were handled as separate estates. Their area is approximately 7,000 acres, about 5,000 acres of which are now bearing.

The plantation managers assured the directors of the home company that they would have rubber from their own plantation in five years' time, but the growth was so rapid and healthy that rubber was obtained from newly-planted trees in less than four years.

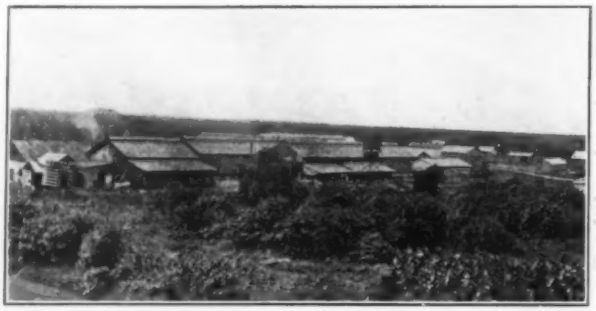
Notwithstanding its size, the plantation is one of the cleanest and best kept in the East, the managers believing that the heavy initial expense of pulling out stumps and roots and thoroughly clearing up the ground, though large, is warranted by the ultimate result. About 20,000 coolies, representing a half-dozen contiguous nationalities, are employed on the plantations.

THERE ARE SIXTY-FIVE MILES OF RAILROAD ON THE PLANTATION.

EMPLOYES' WELFARE CONSIDERED.

The company gives careful attention to the welfare of its employes. It finds its chief difficulty in work along welfare lines in the well-known hostility of the Asiatic to anything that is new. But step by step the company is making progress in this phase of its work. Especial efforts are made to give the various nationalities represented the sort of diet and home surroundings to which each is accustomed.

If the coolies are so well taken care of, it may be realized that the numerous European staff is excellently provided for.



THESE BUILDINGS ARE PART OF THE FACTORY WHERE THE LATEX IS CONVERTED INTO CRUDE RUBBER.

Indeed, the estate is dotted with the tastefully built and decorated dwellings of directors, managers, assistants, chemists, and botanists. Drainage is properly looked after and a filter supplies the necessary pure water for drinking purposes.

As the plantation is rather removed from centers of amusement, the tedium which would otherwise characterize the leisure hours of the staff is relieved by ample means of diversion, there being football fields and tennis courts, a club and a motion-picture theatre.

A MODERN HOSPITAL.

One of the features of the plantation company's efforts on behalf of its employes that has attracted wide attention all through southern Asia is a large hospital which is regarded as the best in the Asiatic tropics. The Dutch Government has shown its appreciation of this by conferring a medal on the company.

THESE FIVE-YEAR-OLD TREES HAVE ALREADY BEEN TAPPED AND WILL CONTINUE TO PRODUCE INCREASING QUANTITIES OF LATEX.

The hospital is equipped to take care of 800 patients, and is situated on the road from Kisaran to Tanah Radja on a site giving good drainage. Adjoining the hospital twenty-two acres have been reserved on which are situated the quarters of the head doctor and the hospital staff, as well as a hospital for Europeans. The buildings are of brick plastered with cement, while the floors are of concrete, cleanliness and ventilation being carefully provided for. The wards number thirteen, and every room has sufficient space for fifty sleeping tables. Each table

consists of a white lacquered iron frame, on top of which are white lacquered planks. To each table belong a mat, a head-cushion and a blanket. Mosquito-proof wards are provided for malaria patients and special wards are set apart for the treatment of anemia and beri-beri. Filtered water is furnished from a near-by well under pressure. Food in the hospital is prepared for the Chinamen by Chinese cooks and for the Mohamedans by Javanese. The staff includes both European and native surgeons and chemists.

THE WORLD'S LARGEST RUBBER ESTATE.

At the present time the company owns property in Sumatra aggregating about 90,000 acres, of which 45,000 acres, or approximately 70 square miles, are fully planted. This constitutes the largest group of rubber estates in the world. Perhaps the New Yorker will obtain a clearer conception of its size by the statement that the planting acreage is over three times the size of Manhattan Island. If its more than five million trees were planted in a row nineteen feet apart—the distance between each tree on the plantation—they would extend over 19,000 miles, or more than three-quarters the distance around the world.

PRODUCTION STEADILY INCREASING.

During 1914 the first shipment of rubber from the company's own plantations was received in America, and while the quantity

HERE THE RUBBER IS BEING BLOCKED AND BALED FOR SHIPMENT TO THE HOME FACTORIES.

that year and also in 1915 was relatively small as compared with the requirements of the United States Rubber Co., the amount received in the ensuing period has steadily increased. About eighty-five per cent of the trees on the plantations are now in bearing, and with many young trees arriving at the bearing age and all the trees increasing in yield with their increasing girth, the plantations will produce more and more rubber each year.

A VALUABLE ASSET.

Due to the efficiency of the Dutch planting organizations and the able staff of the company, the yearly development program has been carried out practically without interruption. Extensions to the planted area are contemplated at an early date, and the outlook for the future is regarded as promising. Already the plantations are proving to be one of the most valuable assets of the United States Rubber Co.

RUBBER CEMENTS[1].

ACID PROOF.

RUBBER cements may have varied composition. If equal parts of fresh unvulcanized rubber and oil are used the mass is so stiff that it could probably be used alone. If as much as four parts of linseed are used considerable filler can be incorporated and make a workable putty. Equal weights of rubber and boiled oil are taken; the rubber is first dissolved in carbon disulphide in the proportion of 4 cc. of carbon disulphide to 1 gr. of finely cut rubber. Boiled linseed oil is then mixed in, and if the oil is warm the mixing is facilitated. The solvent is generally not removed by evaporation until the paste is applied.

Another formula differs in having four times as much boiled linseed oil and then fire clay or other filler, such as silex, is used.

	Parts of Weight.
Crude, finely cut rubber	1
Linseed oil, boiled	4
Fire clay	6

MARINE GLUE.

Standard preparation of this class of cements, which are applied to crevices, hot, and get firm but not brittle when cold, is composed as follows:

	Parts of Weight.
Crude rubber	1
Shellac	2
Pitch	3

The rubber is first dissolved in carbon disulphide or turpentine before mixing with the heated (not superheated) mixture of the other two. The advent of blown patroleum residuums has made it possible to make up hard but flexible compounds without rubber. Grahamite is a good base to which fluxes, such as these just mentioned or soft asphalts, are added.

GASKET COMPOSITIONS.

In the laboratory one can generally make out for low temperatures and pressures by saturating heavy "kraft" wrapping paper with soft pitch, such as wood pitch for steam or with gelatine and glue (hectograph) composition for oils. For high pressures, slots filled with lead rings and a V-shaped rim to the lid are most satisfactory.

MACHINISTS' CEMENTS.

A few words might be said here with reference to machinists' cements. These are the well-known red and white leads. The red lead is often diluted with an equal bulk of silica or other inert substance so as to make it less powdery on drying. The best way to accomplish this is to add rubber or gutta percha to the oil as follows:

	Parts of Weight.
Linseed oil	6
Rubber or gutta-percha	1

The rubber or gutta percha is dissolved in sufficient carbon disulphide to give it the consistency of molasses, mixed with the oil, and left exposed to the air for about 24 hours. The red lead is then mixed to a putty. Oxide of iron makes less brittle cements than red lead.

LEATHER CEMENTS.

The following formulas are given in the "Papier Zeitung": (1) equal parts of good hide-glue and American isinglass, softened in water for 10 hours and then boiled with pure tannin until the whole mass is sticky. The surface of the joint should be roughened and the cement applied hot. (2) One kilo of finely shredded gutta percha digested over a water-bath with 10 kilos of benzol, until dissolved, and 12 kilos of linseed-oil varnish stirred in. (3) Seven and one-half kilos of finely shredded india rubber are completely dissolved in 10 kilos of carbon disulphide by treating while hot, 1 kilo of shellac and 1 kilo of turpentine are added, and the hot solution heated until the two latter ingredients are also dissolved. Precautions against fire and vapors should be observed. (4) Another one noticed in the "Journal of the Society of Chemical Industry": gutta percha, 8 ounces; pitch, 1 ounce; shellac, 1 ounce; olive oil, 1 ounce. These are melted together.

[1]From a paper read by S. S. Sadtler at a meeting of the American Institute of Chemical Engineering.

SOUVENIRS.

The Pioneer Asphalt Co., Lawrenceville, Illinois, is presenting its customers with a novel "Redipoint" pencil.

A useful desk souvenir from the Rolle Rubber Co., of New York and Chicago, is a permanent stone blotter.

Prices of Rubber Products.

From "Prices of Rubber and Rubber Products," War Industries Board, Press Bulletin No. 30, Prepared by Isador Lubin, Special Expert, Price Section, War Trade Board.

RUBBER PRODUCTS.

THERE APPEARS TO BE NO LIMIT to the variety of products in the manufacture of which rubber is employed, and it is said that one of the large rubber concerns in this country manufactures nearly 30,000 different articles. Rubber goods vary from conveyor belts to the finest elastic bands; all of which, however, can be grouped in nine important categories.

The following is a classification of the important rubber products in the order of their importance as determined by the amount of crude rubber consumed in their manufacture.

TABLE I.—CRUDE AND RECLAIMED RUBBER CONSUMED IN THE UNITED STATES IN THE PRODUCTION OF RUBBER GOODS, 1917.[1]

Class.	Crude rubber consumed.	Per cent of total.	Reclaimed rubber consumed.	Per cent of total
Automobile tires and tubes..*long tons*	110,270	70.0	21,006	23.5
Mechanical rubber goods	21,323	14.0	33,633	38.0
Boots and shoes	12,688	8.0	15,778	18.0
Druggists' and stationers' sundries	3,732	2.0	176	.2
Insulated wire and insulating compounds	2,756	1.7	8,470	9.5
Waterproof clothing and cloth	2,176	1.3	5,667	6.3
Rubber cement	1,462	1.0	9	0.0
Hard rubber goods	1,166	1.0	2,163	2.0
Miscellaneous	1,798	1.0	2,266	2.5
Total	157,371	100.0	89,168	100.0

DEVELOPMENT IN THE UNITED STATES.

FIG. 1.—U. S. Consumption, Rubber, 1917.

The United States has always led the world in the manufacture of rubber goods, the industry having had its inception here. The output is approximately seven times as large as that of the next manufacturing nation, and its growth is shown by the fact that in 1906 we consumed 24,113 tons of crude rubber, as against 13,838 tons consumed by Great Britain, the next largest consumer; in 1917 our consumption had reached 157,369 tons, as compared with 25,983 tons consumed by Great Britain. This was an increased consumption for the United States of approximately 130,000 tons, or about 600 per cent. The consumption of Great Britain increased by 12,145 tons, or about 100 per cent in the same period.[2]

It is evident from Table I that rubber tires and tubes are the most important products of the industry, having taken over 70 per cent of the total crude rubber consumption in 1917. In 1914 the United States produced 8,021,371 pneumatic tires, while in 1917 the output amounted to 25,835,573 tires.[3]

Commensurate with the growth of automobile tire production has been that of other rubber products. In 1917 the total value of the rubber goods output in the United States had reached $896,000,000, as contrasted with $301,000,000 in 1914.

FINISHED RUBBER GOODS.

The great number of products turned out by the rubber industry and the limited space available makes impossible as comprehensive an analysis of price fluctuations as would otherwise be desirable. An attempt was made to select representative commodities which would fairly portray the price situation in the various branches of the industry, and for this purpose the method of classification adopted by the War Service Committee of the Rubber Industry of the United States for determining the amount of crude rubber which went into the various forms of rubber goods was used. As shown in Table I, this classification consists of nine sections. Because of difficulties experienced in securing price quotations, however, it was found necessary to omit certain classes of goods. The most important of these was insulated wire. It appeared impossible to separate the price of insulating materials from that of the finished insulated wire, so that quotations for this class would have little worth in showing price fluctations. The classes of products included are as follows:

1. Tires and tubes.
2. Mechanical rubber goods.
3. Boots and shoes.
4. Druggists' sundries.
5. Waterproof clothing.

Reference to Table I will show that the branches of the industry producing these goods took 94.3 per cent of the total rubber consumption of the United States in 1917, and it is believed that together they are fully representative of the total rubber product output of the country.

TIRES AND TUBES.

This type of rubber goods has been divided into 3 groups: (1) automobile pneumatic tires, (2) solid tires, and (3) automobile pneumatic tubes. Since approximately 50 per cent of the automobiles in the United States in 1917 were Fords, it is reasonable to conclude that about one-half of the pneumatic tires manufactured in that year were of the size used on such cars. Therefore 30 by 3½ inch tires, together with the 33 by 4 inch size, which is another variety commonly used, were selected as the types for which prices are quoted. Corresponding sizes were taken as most representative for automobile tubes.

As regards solid tires, which have played an ever-increasing part in the rubber industry, the 36 by 5 inch type which was used in considerable quantities by the United States Motor Transport Corps was selected as representative.

MECHANICAL RUBBER GOODS.

A number of commodities are included in this general category, namely: belting, hose, packing, tubing, lining, tape, and innumerable other rubber goods. The most important are belting and hose, and their price fluctuations have been used to characterize the situation in the mechanical goods section.

BOOTS AND SHOES.

For this branch of the industry, two samples have been selected: (1) rubber boots, and (2) arctics. The types taken as representative are of relatively standard variety and form an important part of the sales of a large producer of boots and shoes.

DRUGGISTS' SUNDRIES.

Hot-water bottles and ice bags may be considered the most typical of the products of the manufacturers of druggists' sundries. Two types of hot-water bottles which have an extensive sale were used in quoting prices for this class of goods, while in the case of ice bags there were selected three styles which were sold in large quantities by two important manufacturers.

RUBBER CLOTHING.

Rubber clothing, according to The Rubber Association of America, may be divided into two distinct classes: (1) calendered rubber clothing, (2) double and single texture raincoats.

[1] These data were secured by The Rubber Association of America through a questionnaire sent to 503 consumers of rubber, 448 of whom replied.

[2] Memorandum on the Rubber Industry.

[3] The growth of the rubber tire industry is well reflected in the patents issued by the United States Patent Office. Fully one-half of the American patents issued in 1916 relating to rubber apply to rubber tires, treads, tire-building, tire-repair machines, rims, etc.

Price quotations were secured for five representative varieties of the former class and for four of the latter. In the calendered rubber clothing class the following have been included[4]:

1. Sheeting (dull finished).
2. Double-coated fire coats.
3. Jeans (dull finished).
4. Single-texture westerns.
5. Double-texture cowboys.

Under double and single texture clothing have been chosen:

1. Bombazine raincoats.[a]
2. Cashmere raincoats.[a]
3. Woolen raincoats.[a]
4. Women's raincoats.[b]

METHODS OF MAKING CHARTS.

In order to determine the relation between crude rubber prices and those of rubber products, and in order to define further the bearing of the price situation in the rubber industry as a whole on that in other industries, a uniform method of averaging price fluctuations was resorted to, and the method used in all the bulletins of the present series was applied to rubber.

After selecting representative articles to typify the various classes of crude rubber and rubber products, monthly quotations were secured from trade journals and from members of the trade for the period 1913 to 1918. (See Tables III and V.) Prices of the more important grades of crude rubber, as well as of the more important rubber goods, were then individually averaged on the basis of their pre-war level and charted. Since the inquiry centers about the effect of the war upon prices, the charts were made to show the movement of prices away from the pre-war level. This effect was produced by treating the average of the actual prices for the twelve months preceding the outbreak of the war (July, 1913, to June, 1914) as equal to 100, and reducing the actual prices for each month from January, 1913, to December, 1918, to the form of relative prices on that scale. Thus, for example, if the selling price of a given unit of a product averaged $2 in the year ending June 30, 1914, and fell to $1.80 in 1915, the relative price of that product for that month would be 90; if the price rose to $4 in June, 1918, the relative price would be 200.

The numerous price charts scattered throughout this bulletin, as well as through the other studies of the series, were drawn on this uniform scale,[5] and under this arrangement all the relative price charts in the present series of price histories are comparable with one another.

For those who are interested not merely in the fluctuations of particular commodities such as rubber tires or rubber clothing, but also in the price fluctations of the class of rubber products as a whole, "index numbers" are provided. A simple average of commodities sold—some by the dozen, some by single units, and some by the foot, as is the case with hot-water bottles, rubber tires, and rubber hose, respectively—would obviously be of little value. Therefore in making index numbers, each individual commodity is "weighted" by multiplying the monthly prices from 1913 to 1918 by the amount of the commodity produced in the United States in the year 1917, plus imports. In the case of crude rubber, since there is virtually no domestic production, the imports for 1917 are used as the weighting factor. The year 1917 was selected as the weighting year so that war-time conditions could be reflected. Figures for 1918 may have been more typical of the war situation, but such data were not available for many commodities when the studies were being written.

TABLE II.—IMPORTS OF CRUDE RUBBER INTO THE UNITED STATES, 1913 TO 1918.[6]

	1913.	1914.	1915.	1916.	1917.	1918.
Plantations ...*long tons*	23,967	35,326	61,085	85,287	134,946	133,167
Parás[7]	18,481	19,466	32,017	22,490	25,225	20,081
Africans	(8)	(8)	(8)	(8)	3,330	730
Centrals	(8)	(8)	(8)	(8)	898	762
Guayule	2,756	850	2,654	435	1,863	1,329
Manicoba and Matto Grasso	(8)	(8)	(8)	(8)	800	146
All other	6,276	5,084	7,068	6,831	....	....
Total	51,480	60,726	102,824	115,043	167,062	156,215

[a] Double-texture. [b] Single-texture print.

[4] These samples of rubber clothing are designated by their respective trade names and have been selected with the aid of The Rubber Association of America.

[5] The one exception to this statement is the case of dyestuffs, where the extraordinary rise in prices necessitated a change in scale.

[6] Since the amount of crude rubber re-exported from the United States is practically negligible, the figures presented in the above table may be taken as analogous to our rubber consumption. Data from THE INDIA RUBBER WORLD, 1917.

[7] Caucho has been included in Parás.

[8] Included in "all other" from 1913 to 1916.

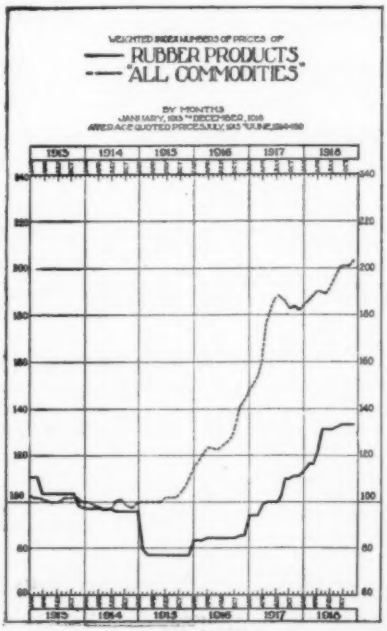


FIGURE 2. WEIGHTED INDEX NUMBERS OF PRICES OF RUBBER PRODUCTS AND "ALL COMMODITIES."—BY MONTHS, JANUARY, 1913, TO DECEMBER, 1918. (AVERAGE QUOTED PRICES, JULY, 1913, TO JUNE, 1914=100.)

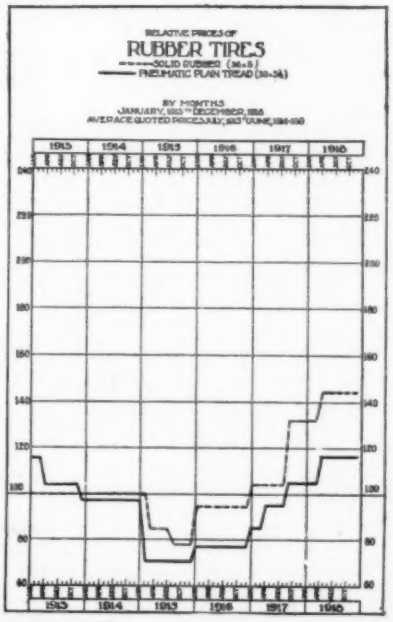


FIGURE 3. RELATIVE PRICES OF RUBBER TIRES: SOLID RUBBER (36 BY 5); PNEUMATIC PLAIN TREAD (30 BY 3½).—BY MONTHS, JANUARY, 1913, TO DECEMBER, 1918. (AVERAGE QUOTED PRICES, JULY, 1913, TO JUNE, 1914=100.)

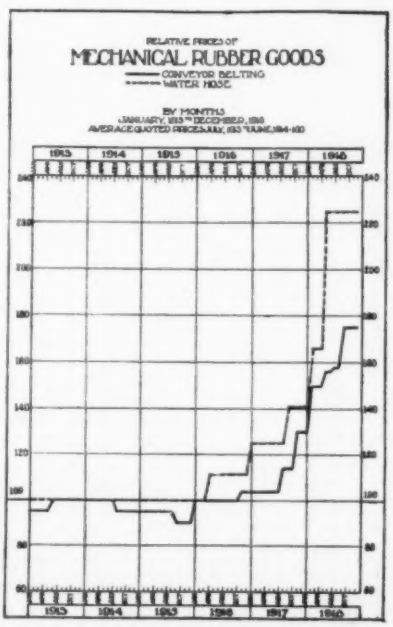


FIGURE 4. RELATIVE PRICES OF MECHANICAL RUBBER GOODS: CONVEYOR BELTING; WATER HOSE.—BY MONTHS, JANUARY, 1913, TO DECEMBER, 1918. (AVERAGE QUOTED PRICES, JULY, 1913, TO JUNE, 1914=100.)

TABLE III.—WHOLESALE PRICES OF RUBBER PRODUCTS, BY MONTHS, QUARTERS, AND YEARS, 1913-1918.[1]

	Rubber tires and tubes.					Rubber footwear.		Mechanical rubber goods.	
	Pneumatic, plain tread, 30x3½in	Pneumatic, nonskid 30x3½in	Pneumatic, nonskid, 33x4 in.	Pneumatic, tubes, 33x4 in.	Solid rubber tire, 36x5 in.	Arctics.	Boots.	Water hose, ½-in., 5-ply.	Conveyor belting 8-inch, 5-ply.
Market	Akron, O.	Akron, O.	Akron, O.	Akron, O.	Akron, O.	Boston	Boston	New York	Akron, O.
Unit	Single tire.	Single tire.	Single tire	Single tube.	Single tire.	Per pair.	Per pair.	Foot.	Foot.
Base price	**13.0900**	**$16.0700**	**$23.7200**	**$3.8260**	**$39.2700**	**$1.2450**	**$2.9650**	**$0.0600**	**$0.5932**
1913—Year	13.9036	17.4001	25.6838	4.1425	39.2700	1.2750	3.1000	.0600	.5844
Quarters—									
First	15.1000	18.9647	27.9930	4.5150	39.2700	1.2400	3.0200	.0600	.5650
Second	13.6000	17.0683	25.1940	4.0638	39.2700	1.2400	3.0200	.0600	.5744
Third	13.4000	17.0683	25.1940	4.0638	39.2700	1.3100	3.1800	.0600	.5932
Fourth	13.3145	16.4793	24.3545	3.9283	39.2700	1.3100	3.1800	.0600	.5932
Months—									
January	15.1000	18.9647	27.9930	4.5150	39.2700	1.2400	3.0200	.0600	.5650
February	15.1000	18.9647	27.9930	4.5150	39.2700	1.2400	3.0200	.0600	.5650
March	15.1000	18.9647	27.9930	4.5150	39.2700	1.2400	3.0200	.0600	.5650
April	13.6000	17.0683	25.1940	4.0638	39.2700	1.2400	3.0200	.0600	.5650
May	13.6000	17.0683	25.1940	4.0638	39.2700	1.2400	3.0200	.0600	.5650
June	13.6000	17.0683	25.1940	4.0638	39.2700	1.2400	3.0200	.0600	.5932
July	13.4000	17.0683	25.1940	4.0638	39.2700	1.3100	3.1800	.0600	.5932
August	13.4000	17.0683	25.1940	4.0638	39.2700	1.3100	3.1800	.0600	.5932
September	13.4000	17.0683	25.1940	4.0638	39.2700	1.3100	3.1800	.0600	.5932
October	13.4000	17.0683	25.1940	4.0638	39.2700	1.3100	3.1800	.0600	.5932
November	13.4000	17.0683	25.1940	4.0638	39.2700	1.3100	3.1800	.0600	.5932
December	12.7435	15.3615	22.6765	3.6575	39.2700	1.3100	3.1800	.0600	.5932
1914—Year	12.7435	15.3615	22.6765	3.6575	39.2700	1.1800	2.7500	.0600	.5814
Quarters—									
First	12.7435	15.3615	22.6765	3.6575	39.2700	1.1800	2.7500	.0600	.5932
Second	12.7435	15.3615	22.6765	3.6575	39.2700	1.1800	2.7500	.0600	.5932
Third	12.7435	15.3615	22.6765	3.6575	39.2700	1.1800	2.7500	.0600	.5744
Fourth	12.7435	15.3615	22.6765	3.6575	39.2700	1.1800	2.7500	.0600	.5650
Months—									
January	12.7435	15.3615	22.6765	3.6575	39.2700	1.1800	2.7500	.0600	.5932
February	12.7435	15.3615	22.6765	3.6575	39.2700	1.1800	2.7500	.0600	.5932
March	12.7435	15.3615	22.6765	3.6575	39.2700	1.1800	2.7500	.0600	.5932
April	12.7435	15.3615	22.6765	3.6575	39.2700	1.1800	2.7500	.0600	.5932
May	12.7435	15.3615	22.6765	3.6575	39.2700	1.1800	2.7500	.0600	.5932
June	12.7435	15.3615	22.6765	3.6575	39.2700	1.1800	2.7500	.0600	.5932
July	12.7435	15.3615	22.6765	3.6575	39.2700	1.1800	2.7500	.0600	.5932
August	12.7435	15.3615	22.6765	3.6575	39.2700	1.1800	2.7500	.0600	.5650
September	12.7435	15.3615	22.6765	3.6575	39.2700	1.1800	2.7500	.0600	.5650
October	12.7435	15.3615	22.6765	3.6575	39.2700	1.1800	2.7500	.0600	.5650
November	12.7435	15.3615	22.6765	3.6575	39.2700	1.1800	2.7500	.0600	.5650
December	12.7435	15.3615	22.6765	3.6575	39.2700	1.1800	2.7500	.0600	.5650
1915—Year	9.4614	10.7128	17.3474	2.9869	36.4300	1.1800	2.6333	.0600	.5550
Quarters—									
First	10.3565	12.3138	18.8008	3.1698	37.2038	1.1800	2.7033	.0600	.5650
Second	9.1630	10.2900	16.8630	2.9260	33.0715	1.1800	2.6100	.0600	.5650
Third	9.1630	10.2900	16.8630	2.9260	31.5671	1.1800	2.6100	.0600	.5550
Fourth	9.1630	10.2900	16.8630	2.9260	30.8000	1.1800	2.6100	.0600	.5350
Months—									
January	12.7435	15.3615	22.6765	3.6575	39.2700	1.1800	2.7500	.0600	.5650
February	9.1630	10.2900	16.8630	2.9260	39.2700	1.1800	2.7500	.0600	.5650
March	9.1630	10.2900	16.8630	2.9260	33.0715	1.1800	2.6100	.0600	.5650
April	9.1630	10.2900	16.8630	2.9260	33.0715	1.1800	2.6100	.0600	.5650
May	9.1630	10.2900	16.8630	2.9260	33.0715	1.1800	2.6100	.0600	.5650
June	9.1630	10.2900	16.8630	2.9260	33.0715	1.1800	2.6100	.0600	.5650
July	9.1630	10.2900	16.8630	2.9260	33.0715	1.1800	2.6100	.0600	.5650
August	9.1630	10.2900	16.8630	2.9260	30.8000	1.1800	2.6100	.0600	.5650
September	9.1630	10.2900	16.8630	2.9260	30.8000	1.1800	2.6100	.0600	.5350
October	9.1630	10.2900	16.8630	2.9260	30.8000	1.1800	2.6100	.0600	.5350
November	9.1630	10.2900	16.8630	2.9260	30.8000	1.1800	2.6100	.0600	.5350
December	9.1630	10.2900	16.8630	2.9260	30.8000	1.1800	2.6100	.0600	.5350
1916—Year	10.0870	11.3100	18.5570	3.2340	37.2680	1.1400	2.5500	.0675	.5991
Quarters—									
First	10.0870	11.3100	18.5570	3.2340	37.2680	1.1400	2.5500	.0600	.5950
Second	10.0870	11.3100	18.5570	3.2340	37.2680	1.1400	2.5500	.0700	.5950
Third	10.0870	11.3100	18.5570	3.2340	37.2680	1.1400	2.5500	.0700	.5950
Fourth	10.0870	11.3100	18.5570	3.2340	37.2680	1.1400	2.5500	.0700	.6117
Months—									
January	10.0870	11.3100	18.5570	3.2340	37.2680	1.1400	2.5500	.0600	.5950
February	10.0870	11.3100	18.5570	3.2340	37.2680	1.1400	2.5500	.0600	.5950
March	10.0870	11.3100	18.5570	3.2340	37.2680	1.1400	2.5500	.0600	.5950
April	10.0870	11.3100	18.5570	3.2340	37.2680	1.1400	2.5500	.0700	.5950
May	10.0870	11.3100	18.5570	3.2340	37.2680	1.1400	2.5500	.0700	.5950
June	10.0870	11.3100	18.5570	3.2340	37.2680	1.1400	2.5500	.0700	.5950
July	10.0870	11.3100	18.5570	3.2340	37.2680	1.1400	2.5500	.0700	.5950
August	10.0870	11.3100	18.5570	3.2340	37.2680	1.1400	2.5500	.0700	.5950
September	10.0870	11.3100	18.5570	3.2340	37.2680	1.1400	2.5500	.0700	.5950
October	10.0870	11.3100	18.5570	3.2340	37.2680	1.1400	2.5500	.0700	.5950
November	10.0870	11.3100	18.5570	3.2340	37.2680	1.1400	2.5500	.0700	.6200
December	10.0870	11.3100	18.5570	3.2340	37.2680	1.1400	2.5500	.0700	.6200
1917—Year	12.5895	13.9888	23.9726	3.8018	44.6333	1.3392	3.0125	.0783	.6068
Quarters—									
First	11.1265	12.6300	21.5600	3.5420	41.0025	1.3100	2.9500	.0750	.6200
Second	12.5125	13.5266	23.7160	3.8885	41.0025	1.3100	2.9500	.0750	.6200
Third	12.9360	13.8993	24.5116	3.8885	44.6343	1.3567	3.0500	.0783	.6600
Fourth	13.7830	15.3615	26.1030	3.8885	51.8980	1.3800	3.1000	.0850	.7433
Months—									
January	11.1265	12.6300	21.5600	3.5420	41.0025	1.3100	2.9500	.0750	.6200
February	11.1265	12.6300	21.5600	3.5420	41.0025	1.3100	2.9500	.0750	.6200
March	11.1265	12.6300	21.5600	3.5420	41.0025	1.3100	2.9500	.0750	.6200
April	12.5125	12.6300	23.7160	3.8885	41.0025	1.3100	2.9500	.0750	.6200
May	12.5125	13.9750	23.7160	3.8885	41.0025	1.3100	2.9500	.0750	.6200
June	12.5125	13.9750	23.7160	3.8885	41.0025	1.3100	2.9500	.0750	.6200
July	12.5125	13.9750	23.7160	3.8885	41.0025	1.3100	2.9500	.0750	.6200
August	12.5125	13.9750	23.7160	3.8885	41.0025	1.3800	3.1000	.0750	.6800
September	13.7830	15.3615	26.1030	3.8885	51.8980	1.3800	3.1000	.0850	.6800
October	13.7830	15.3615	26.1030	3.8885	51.8980	1.3800	3.1000	.0850	.6800
November	13.7830	15.3615	26.1030	3.8885	51.8980	1.3800	3.1000	.0850	.7750
December	13.7830	15.3615	26.1030	3.8885	51.8980	1.3800	3.1000	.0850	.7750
1918—Year	14.8514	17.1229	28.7210	4.1606	56.8525	1.6500	3.3600	.1220	.9454
Quarters—									
First	13.7830	15.3615	26.1030	3.8885	51.8980	1.6500	3.3600	.0950	.8516
Second	15.2075	17.7100	28.7210	4.2735	57.1725	1.6500	3.3600	.1233	.9166
Third	15.2075	17.7100	30.0300	4.2735	57.1725	1.6500	3.3600	.1350	.9733
Fourth	15.2075	17.7100	30.0300	4.2735	57.1725	1.6500	3.3600	.1350	1.0400
Months—									
January	13.7830	15.3615	26.1030	3.8885	51.8980	1.6500	3.3600	.0850	.7750
February	13.7830	15.3615	26.1030	3.8885	51.8980	1.6500	3.3600	.1000	.8900
March	13.7830	15.3615	26.1030	3.8885	51.8980	1.6500	3.3600	.1000	.8900
April	15.2075	17.7100	26.1030	4.2735	57.1725	1.6500	3.3600	.1000	.8900
May	15.2075	17.7100	30.0300	4.2735	57.1725	1.6500	3.3600	.1350	.9300
June	15.2075	17.7100	30.0300	4.2735	57.1725	1.6500	3.3600	.1350	.9300
July	15.2075	17.7100	30.0300	4.2735	57.1725	1.6500	3.3600	.1350	.9400
August	15.2075	17.7100	30.0300	4.2735	57.1725	1.6500	3.3600	.1350	.9400
September	15.2075	17.7100	30.0300	4.2735	57.1725	1.6500	3.3600	.1350	1.0400
October	15.2075	17.7100	30.0300	4.2735	57.1725	1.6500	3.3600	.1350	1.0400
November	15.2075	17.7100	30.0300	4.2735	57.1725	1.6500	3.3600	.1350	1.0400
December	15.2075	17.7100	30.0300	4.2735	57.1725	1.6500	3.3600	.1350	1.0400

[1] Prices of rubber products from private firms.

A review of the successive steps taken in making these index numbers will illustrate the process. In dealing with crude rubber, for example, the amount of each individual type imported into the United States in 1917 was first determined, and this amount was adopted as the weighting factor. (See Table II.) Secondly, the price of each type in every month of the six-year period covered was multiplied by this weight. Thirdly, the products of the prices of the nine different types of rubber, times their respective weights, were added up separately for each month; and, finally, these monthly aggregates were turned into relatives on the pre-war base; that is, the average of the aggregates for the 12 months, July, 1913, to June, 1914, was made equal to 100, and all the other individual monthly aggregates converted into relatives on that scale.

The method adopted in weighting rubber products was somewhat different. In this instance, because of the lack of information regarding the amount of the various classes of goods produced, it was found necessary to give to the individual classes a weight which was proportionate to their importance in the entire rubber industry. The amount of rubber consumed in the manufacture of the various types of goods was here used as the determining factor (see Table I), and the number of tons of rubber which went into the production of each class was used as the weight for that class.

It is apparent that index numbers made on this plan for the entire rubber industry are comparable with the relative prices for individual commodities as shown in the various charts. By using these index numbers the reader can get a clear idea of average price fluctuations in the rubber industry as a whole and can have at the same time a basis for comparing such fluctuations with those in other industries.

RUBBER PRODUCT PRICES.

To understand fully the course of the prices of rubber goods during the war period, it is necessary to review briefly the status of the rubber industry in the years prior to 1913. The first two years of the present decade saw the plantation industry still in its infancy, and in 1911 the amount of rubber taken by the five leading rubber-consuming countries surpassed the world's total production. A similar situation, in a less marked degree, existed in 1912, and two-dollar rubber was not uncommon. Talk of synthetic rubber and the future sources of supply was rife in the trade and 1913 opened with rubber prices around one dollar and rubber products still reflecting the high level of the previous year. It should, therefore, be borne in mind that the base year (July, 1913, to June, 1914) was one of high prices for the rubber industry and that these high prices were the result of crude rubber costs. Later, the situation changed, and in 1917 and 1918, after a period of relative sluggishness, the price of rubber goods rose to a point above the pre-war level. This time the high cost of cotton fabrics and other ingredients was the controlling factor; indeed crude rubber prices in these years were considerably below their pre-war level.

Rubber products did not feel the effects of the speculative price rises experienced by crude rubber at various intervals during the six years here considered. Unlike crude rubber, the prices of finished products continued along a more or less level path, broken at relatively few points, tending downward throughout the first half of the period and upward during the second. It will be noted, on the one hand, that the rise in the price level of rubber goods began almost simultaneously with that of all commodities (see Figure 2), while on the other hand it lagged almost a year behind the rise in the level of ingredients, such as cotton and chemicals.

Rubber goods in general, however, never reached the high level of either their ingredients or commodities in general, the low price of crude rubber having exercised a tempering effect. Thus the rubber-product price level had by the latter half of 1918 advanced but 57 per cent above its lowest point in the past five years, while prices of the ingredients rose by 164 per cent. The index for "all commodities" had jumped 110 per cent in the meantime.

Few industries, on the other hand, experienced anything equal to the price slump of rubber commodities in 1915. In that year practically all rubber goods underwent a price decrease, and the average level for rubber products fell approximately 20 per cent. This situation may be explained by the fact that crude rubber was relatively cheap at the time, while the glut of the cotton market had sent the price of that commodity to a low

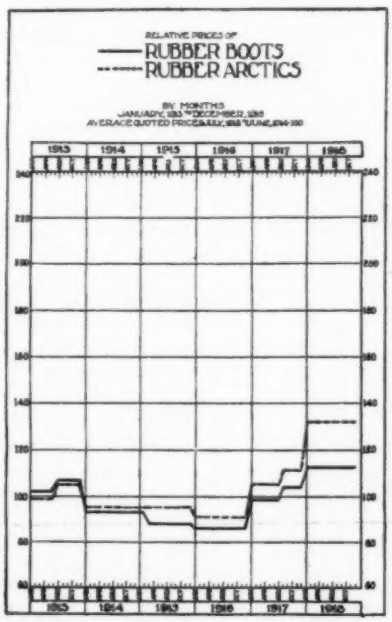


FIGURE 5. RELATIVE PRICES OF RUBBER BOOTS AND RUBBER ARCTICS.—BY MONTHS, JANUARY, 1913, TO DECEMBER, 1918. (AVERAGE QUOTED PRICES, JULY, 1913, TO JUNE, 1914=100.)

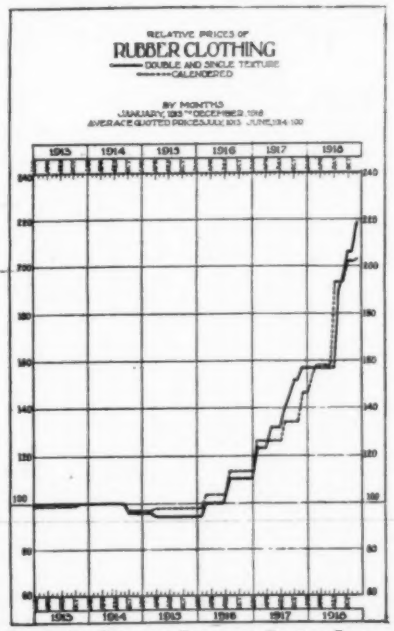


FIGURE 6. RELATIVE PRICES OF RUBBER CLOTHING: DOUBLE AND SINGLE TEXTURE; CALENDERED.—BY MONTHS, JANUARY, 1913, TO DECEMBER, 1918. (AVERAGE QUOTED PRICES, JULY, 1913, TO JUNE, 1914=100.)

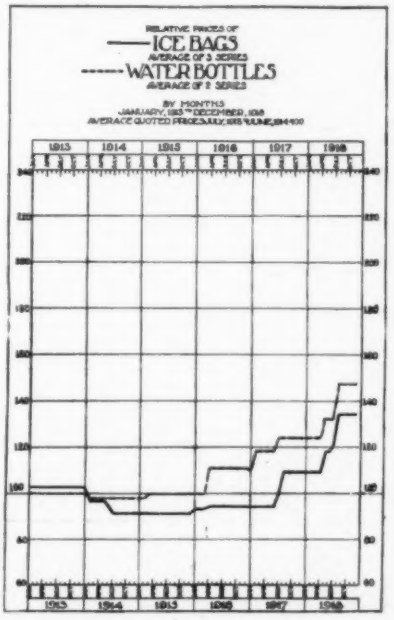


FIGURE 7. RELATIVE PRICES OF: ICE BAGS, AVERAGE OF 3 SERIES; WATER BOTTLES, AVERAGE OF 2 SERIES.—BY MONTHS, JANUARY, 1913, TO DECEMBER, 1918. (AVERAGE QUOTED PRICES, JULY, 1913, TO JUNE, 1914=100.)

TABLE V.—WHOLESALE PRICES OF RUBBER PRODUCTS BY MONTHS, QUARTERS, AND YEARS, 1913-1918.[1]

	Druggists' sundries.				Rubber clothing.					
	Water bottles, all rubber.	Water bottles, average of 2 series.	Ice bags, cloth lined.	Ice bags, average of 3 series.	Single texture, women's coat.	Double texture, bombazine coat.	Double and single texture, average of 4 series.	Calendered, double coated fire coat.	Calendered, single texture western.	Calendered, average of 5 series.
Market	F.o.b. factory.	F.o.b. factory.	F.o.b. factory.	F.o.b. factory.	F.o.b. factory.	F.o.b. factory.	F.o.b. factory.	F.o.b. factory.	F.o.b. factory.	F.o.b factory.
Unit	Dozen.	Dozen.	Dozen.	Dozen.	1 garment.	1 garment.	1 coat.	1 garment.	1 coat	1 coat.
Base price	**$7.3958**	**$9.0979**	**$8.1000**	**$6.6236**	**$2.2500**	**$3.2500**	**$3.7500**	**$3.1333**	**$2.7500**	**$2.8367**
1913—Year	7.5000	9.1500	8.1000	6.8000	2.2500	3.2500	3.7500	3.1833	2.7500	2.8167
Quarters—										
First	7.5000	9.1500	8.1000	6.8000	2.2500	3.2500	3.7500	3.2000	2.7500	2.8100
Second	7.5000	9.1500	8.1000	6.8000	2.2500	3.2500	3.7500	3.2000	2.7500	2.8100
Third	7.5000	9.1500	8.1000	6.8000	2.2500	3.2500	3.7500	3.2000	2.7500	2.8100
Fourth	7.5000	9.1500	8.1000	6.8000	2.2500	3.2500	3.7500	3.1333	2.7500	2.8367
Months—										
January	7.5000	9.1500	8.1000	6.8000	2.2500	3.2500	3.7500	3.2000	2.7500	2.8100
February	7.5000	9.1500	8.1000	6.8000	2.2500	3.2500	3.7500	3.2000	2.7500	2.8100
March	7.5000	9.1500	8.1000	6.8000	2.2500	3.2500	3.7500	3.2000	2.7500	2.8100
April	7.5000	9.1500	8.1000	6.8000	2.2500	3.2500	3.7500	3.2000	2.7500	2.8100
May	7.5000	9.1500	8.1000	6.8000	2.2500	3.2500	3.7500	3.2000	2.7500	2.8100
June	7.5000	9.1500	8.1000	6.8000	2.2500	3.2500	3.7500	3.2000	2.7500	2.8100
July	7.5000	9.1500	8.1000	6.8000	2.2500	3.2500	3.7500	3.2000	2.7500	2.8100
August	7.5000	9.1500	8.1000	6.8000	2.2500	3.2500	3.7500	3.2000	2.7500	2.8100
September	7.5000	9.1500	8.1000	6.8000	2.2500	3.2500	3.7500	3.2000	2.7500	2.8100
October	7.5000	9.1500	8.1000	6.8000	2.2500	3.2500	3.7500	3.2000	2.7500	2.8100
November	7.5000	9.1500	8.1000	6.8000	2.2500	3.2500	3.7500	3.1000	2.7500	2.8000
December	7.5000	9.1500	8.1000	6.8000	2.2500	3.2500	3.7500	3.1000	2.7500	2.8000
1914—Year	7.2708	9.0854	7.8000	6.2653	2.2500	3.0625	3.7188	3.0750	2.7500	2.8250
Quarters—										
First	7.3333	9.0667	8.1000	6.5333	2.2500	3.2500	3.7500	3.1000	2.7500	2.8500
Second	7.2500	9.0250	8.1000	6.3611	2.2500	3.2500	3.7500	3.1000	2.7500	2.8500
Third	7.2500	9.0250	7.5000	6.0833	2.2500	3.2500	3.7500	3.1000	2.7500	2.8500
Fourth	7.2500	9.0250	7.5000	6.0833	2.2500	2.5000	3.6250	3.0000	2.7500	2.7500
Months—										
January	7.5000	9.1500	8.1000	6.8000	2.2500	3.2500	3.7500	3.1000	2.7500	2.8500
February	7.2500	9.0250	8.1000	6.4000	2.2500	3.2500	3.7500	3.1000	2.7400	2.8500
March	7.2500	9.0250	8.1000	6.4000	2.2500	3.2500	3.7500	3.1000	2.7500	2.8500
April	7.2500	9.0250	8.1000	6.4000	2.2500	3.2500	3.7500	3.1000	2.7500	2.8500
May	7.2500	9.0250	8.1000	6.4000	2.2500	3.2500	3.7500	3.1000	2.7500	2.8500
June	7.2500	9.0250	8.1000	6.2833	2.2500	3.2500	3.7500	3.1000	2.7500	2.8500
July	7.2500	9.0250	7.5000	6.0833	2.2500	3.2500	3.7500	3.1000	2.7500	2.8500
August	7.2500	9.0250	7.5000	6.0833	2.2500	3.2500	3.7500	3.1000	2.7500	2.8500
September	7.2500	9.0250	7.5000	6.0833	2.2500	3.2500	3.7500	3.1000	2.7500	2.8500
October	7.2500	9.0250	7.5000	6.0833	2.2500	2.5000	3.6250	3.0000	2.7500	2.7500
November	7.2500	9.0250	7.5000	6.0833	2.2500	2.5000	3.6250	3.0000	2.7500	2.7500
December	7.2500	9.0250	7.5000	6.0833	2.2500	2.5000	3.6250	3.0000	2.7500	2.7500
1915—Year	7.4583	9.1292	7.5000	6.0883	2.3250	2.2000	3.5688	3.0000	2.7500	2.7725
Quarters—										
First	7.3333	9.0667	7.5000	6.0833	2.2500	2.5000	3.6250	3.0000	2.7500	2.7500
Second	7.5000	9.1500	7.5000	6.0833	2.3500	2.1000	3.5500	3.0000	2.7500	2.7800
Third	7.5000	9.1500	7.5000	6.0833	2.3500	2.1000	3.5500	3.0000	2.7500	2.7800
Fourth	7.5000	9.1500	7.5000	6.0833	2.3500	2.1000	3.5500	3.0000	2.7500	2.7800
Months—										
January	7.2500	9.0250	7.5000	6.0833	2.2500	2.5000	3.6250	3.0000	2.7500	2.7500
February	7.2500	9.0250	7.5000	6.0833	2.2500	2.5000	3.6250	3.0000	2.7500	2.7500
March	7.5000	9.1500	7.5000	6.0833	2.2500	2.5000	3.6250	3.0000	2.7500	2.7500
April	7.5000	9.1500	7.5000	6.0833	2.3500	2.1000	3.5500	3.0000	2.7500	2.7800
May	7.5000	9.1500	7.5000	6.0833	2.3500	2.1000	3.5500	3.0000	2.7500	2.7800
June	7.5000	9.1500	7.5000	6.0833	2.3500	2.1000	3.5500	3.0000	2.7500	2.7800
July	7.5000	9.1500	7.5000	6.0833	2.3500	2.1000	3.5500	3.0000	2.7500	2.7800
August	7.5000	9.1500	7.5000	6.0833	2.3500	2.1000	3.5500	3.0000	2.7500	2.7800
September	7.5000	9.1500	7.5000	6.0833	2.3500	2.1000	3.5500	3.0000	2.7500	2.7800
October	7.5000	9.1500	7.5000	6.0833	2.3500	2.1000	3.5500	3.0000	2.7500	2.7800
November	7.5000	9.1500	7.5000	6.0833	2.3500	2.1000	3.5500	3.0000	2.7500	2.7800
December	7.5000	9.1500	7.5000	6.0833	2.3500	2.1000	3.5500	3.0000	2.7500	2.7800

	Druggists' sundries.				Rubber clothing.					
	Water bottles, all rubber.	Water bottles, average of 2 series.	Ice bags, cloth lined.	Ice bags, average of 3 series.	Single texture, women's coat.	Double texture, bombazine coat.	Double and single texture, average of 4 series.	Calendered, double coate fire coat.	Calendered, single texture western.	Calendered, average of 5 series.
Market	F.o.b. factory.	F.o.b. factory.	F.o.b. factory.	F.o.b. factory.	F.o.b. factory.	F.o.b. factory.	F.o.b. factory.	F.o.b. factory.	F.o.b. factory.	F.o.b factory.
Unit	Dozen.	Dozen.	Dozen.	Dozen.	1 garment.	1 garment.	1 coat.	1 garment.	1 coat	1 coat.
Base price	**$7.3958**	**$9.0979**	**$8.1000**	**$6.6236**	**$2.2500**	**$3.2500**	**$3.7500**	**$3.1333**	**$2.7500**	**$2.8367**
1916—Year	8.0625	9.8813	8.0000	6.3125	2.5792	2.4333	3.8729	3.1875	3.1667	3.0300
Quarters—										
First	7.5000	9.1500	8.0000	6.2500	2.4000	2.1500	3.6167	3.0333	2.8667	2.8333
Second	8.2500	10.1250	8.0000	6.3333	2.5000	2.2500	3.7500	3.1000	3.1000	2.9400
Third	8.2500	10.1250	8.0000	6.3333	2.6667	2.5833	4.0000	3.2667	3.3000	3.1267
Fourth	8.2500	10.1250	8.0000	6.3333	2.7500	2.7500	4.1250	3.3500	3.4000	3.2200
Months—										
January	7.5000	9.1500	8.0000	6.2500	2.3500	2.1000	3.5500	3.0000	2.7500	2.7800
February	7.5000	9.1500	8.0000	6.2500	2.3500	2.1000	3.5500	3.0000	2.7500	2.7800
March	7.5000	9.1500	8.0000	6.2500	2.5000	2.2500	3.7500	3.1000	3.1000	2.9400
April	8.2500	10.1250	8.0000	6.3333	2.5000	2.2500	3.7500	3.1000	3.1000	2.9400
May	8.2500	10.1250	8.0000	6.3333	2.5000	2.2500	3.7500	3.1000	3.1000	2.9400
June	8.2500	10.1250	8.0000	6.3333	2.5000	2.2500	3.7500	3.1000	3.1000	2.9400
July	8.2500	10.1250	8.0000	6.3333	2.5000	2.2500	3.7500	3.1000	3.1000	2.9400
August	8.2500	10.1250	8.0000	6.3333	2.7500	2.7500	4.1250	3.3500	3.4000	3.2200
September	8.2500	10.1250	8.0000	6.3333	2.7500	2.7500	4.1250	3.3500	3.4000	3.2200
October	8.2500	10.1250	8.0000	6.3333	2.7500	2.7500	4.1250	3.3500	3.4000	3.2200
November	8.2500	10.1250	8.0000	6.3333	2.7500	2.7500	4.1250	3.3500	3.4000	3.2200
December	8.2500	10.1250	8.0000	6.3333	2.7500	2.7500	4.1250	3.3500	3.4000	3.2200
1917—Year	8.2500	11.0375	8.5000	6.7778	3.34	3.1875	5.0708	3.8000	3.6667	3.6733
Quarters—										
First	8.2500	10.6250	8.0000	6.3333	2.9167	2.9167	4.4583	3.6167	3.5333	3.4600
Second	8.2500	10.8750	8.0000	6.3333	3.3333	3.0000	4.8333	3.7500	3.6000	3.5800
Third	8.2500	11.3250	9.0000	7.1111	3.5333	3.1667	5.2167	3.8500	3.7000	3.7267
Fourth	8.2500	11.3250	9.0000	7.3333	3.6000	3.6667	5.7750	3.9833	3.8333	3.9267
Months—										
January	8.2500	10.1250	8.0000	6.3333	2.7500	2.7500	4.1250	3.3500	3.4000	3.2200
February	8.2500	10.8750	8.0000	6.3333	3.0000	3.0000	4.6250	3.7500	3.6000	3.5800
March	8.2500	10.8750	8.0000	6.3333	3.0000	3.0000	4.6250	3.7500	3.6000	3.5800
April	8.2500	10.8750	8.0000	6.3333	3.0000	3.0000	4.6250	3.7500	3.6000	3.5800
May	8.2500	10.8750	8.0000	6.3333	3.5000	3.0000	4.9375	3.7500	3.6000	3.5800
June	8.2500	10.8750	8.0000	6.3333	3.5000	3.0000	4.9375	3.7500	3.6000	3.5800
July	8.2500	11.3250	9.0000	6.6667	3.5000	3.0000	4.9375	3.7500	3.6000	3.5800
August	8.2500	11.3250	9.0000	7.3333	3.5000	3.0000	5.2500	3.9000	3.7500	3.8000
September	8.2500	11.3250	9.0000	7.3333	3.6000	3.5000	5.4625	3.9000	3.7500	3.8000
October	8.2500	11.3250	9.0000	7.3333	3.6000	3.5000	5.7125	3.9000	3.7500	3.8000
November	8.2500	11.3250	9.0000	7.3333	3.6000	3.5000	5.7125	3.9000	3.7500	3.8000
December	8.2500	11.3250	9.0000	7.3333	3.6000	4.0000	5.9000	4.1500	4.0000	4.1800
1918—Year	9.6000	12.4025	9.7000	8.1778	3.7500	4.5025	6.6354	4.8583	4.8875	5.0192
Quarters—										
First	8.2500	11.3250	9.0000	7.3333	3.6000	4.0000	5.9000	4.2833	4.2000	4.3500
Second	9.3500	11.8750	9.0000	7.7222	3.6000	4.0000	5.9000	4.4000	4.3500	4.4000
Third	10.3000	12.1500	10.2400	8.6856	3.8000	4.5833	6.8500	5.2500	5.0000	5.4800
Fourth	10.5000	13.6000	10.5600	8.9700	4.0000	5.6667	7.9167	5.5000	5.5000	5.7567
Months—										
January	8.2500	11.3250	9.0000	7.3333	3.6000	4.0000	5.9000	4.1500	4.0000	4.1800
February	8.2500	11.3250	9.0000	7.3333	3.6000	4.0000	5.9000	4.3000	4.2500	4.3800
March	8.2500	11.3250	9.0000	7.3333	3.6000	4.0000	5.9000	4.4000	4.3500	4.4900
April	8.2500	11.3250	9.0000	7.3333	3.6000	4.0000	5.9000	4.4000	4.3500	4.4900
May	9.9000	12.1500	9.0000	7.9167	3.6000	4.0000	5.9000	4.4000	4.3500	4.4900
June	9.9000	12.1500	9.0000	7.9167	3.6000	4.0000	5.9000	4.4000	4.3500	4.4900
July	9.9000	12.4500	9.6000	8.1167	3.6000	4.0000	5.9000	5.2500	5.5000	5.4800
August	10.5000	13.5000	10.5600	8.9700	3.9000	4.7500	7.1625	5.2500	5.5000	5.4800
September	10.5000	13.5000	10.5600	8.9700	3.9000	5.0000	7.4125	5.2500	5.5000	5.4800
October	10.5000	13.5000	10.5600	8.9700	4.0000	5.5000	7.7500	5.5000	5.5000	5.7500
November	10.5000	13.5000	10.5600	8.9700	4.0000	5.5000	7.7500	5.5000	5.5000	5.7500
December	10.5000	13.5000	10.5600	8.9700	4.0000	6.0000	8.2500	5.5000	5.5000	5.7700

[1] Prices of rubber products from private firms.

point. Another reason assigned by some members of the trade was the growing competition in the rubber industry and the desire of the large manufacturers to crowd out the new arrivals.[9]

An analysis of the price fluctuations in the individual branches of the industry will bring out in further detail the factors bearing on the price situation.

RUBBER TIRES.

The general low-price level of rubber goods in early 1915 was characteristic of every product of the industry. In the case of tires, however, the price fall was most marked, a 27 per cent decrease taking place within the first quarter of the year. This may be accounted for by (1) the abnormally low prices of cotton fabrics—the aftermath of the shutting off of cotton exportations—and (2) the abnormal competition in the rubber industry, the results of which were at that time making themselves felt. This competition was the culmination of the situation in the three preceding years. In 1912, when prices were highest, there was talk in the trade of the prodigious profits of the tire manufacturers. This talk naturally resulted in a rush to make tires, and soon capacity of production outran capacity of consumption. An inevitable scaling of prices followed, and pneumatic times continued downward until the low point was reached in early 1915. The low price of February continued until December, when the price started on an upward course, which reached its summit in April, 1918. This rise was, of course, due to the increasing cost of labor and materials other than rubber. In no case, however, was the rise proportionate to either of these factors.

Solid rubber tires are a relatively new product of the rubber industry. In 1913 and 1914 they were relatively little in demand and it was not until the motorization of the Allied transport system after the outbreak of the European War that they became a factor of large importance. Solid-tire prices continued unchanged through 1913 and 1914, falling early in 1915 in sympathy with all other rubber goods. In late 1915 the war demand for solid tires made itself felt. This demand tended to reinforce the rise of tire prices in general, and January, 1916, witnessed an increase of 16 per cent, as contrasted with a 7 per cent rise in the price of pneumatics. (See Figure 3.)

In 1917 and 1918 solid-tire prices rose quite regularly with those of pneumatics. The tremendous demand resulting from Army needs accentuated the rise in the price of the former, however, and 1918 ended with solid-tire prices 45 per cent above their pre-war average, as contrasted with pneumatics, whose prices had risen but 16 per cent above the 1913-1914 level.

MECHANICAL RUBBER GOODS.

It was in this branch of the rubber industry that price increases were most evident in the six years dealt with in this study. Rubber hose, for example, increased 125 per cent above its pre-war level, while belting reached a level which was 75 per cent above the 1913-1914 average. The rise in the price of hose may be attributed to both the increasing cost of labor and materials—the amount of crude rubber used in the production being relatively small—and the stimulated demand. The Army, the Navy, and the Shipping Board used large amounts of rubber hose, whereas in the case of garden hose civilian consumption also increased appreciably.

Rubber belting is fast becoming a competitor of its leather prototype, and its price rise may be in part attributed to the increasing price of the leather product. The extension of industrial plants in the last two years and the consequent demand for transmission and conveyor belting was another potent factor in price determination.[10].

[9] THE INDIA RUBBER WORLD, March 1, 1915, page 318.

[10] It should be noted that although the price increase of mechanical goods was larger than that of the products of any other branch of the rubber industry, yet when compared to prices in general in late 1918, rubber hose was slightly above and rubber belting slightly below the level of "all commodities."

RUBBER FOOTWEAR.

Although rubber boot and shoe prices did not drop to the low level of tire prices, they nevertheless remained considerably below their pre-war average for a longer period than did the latter. This may be attributed in part to the low prices of reclaimed rubber, tremendous quantities of which are used in the footwear branch of the industry. The mild winters of the first half of the six-year period dealt with and the consequent difficulty of disposing of stocks also played an important part in the price situation. Increasing costs added to a demand stimulated by war needs sent the price of rubber footwear upward at the end of 1916. It is notable that only three increases were made in the price of rubber footwear during the period of the war—a situation characteristic of very few important commodities. (See Figure 5.)

RUBBER CLOTHING.

The rise of rubber clothing prices, which was surpassed by only one other rubber commodity herein dealt with, namely, rubber hose, may be attributed almost entirely to the cost of labor and materials. The Army demand for raincoats had its effect, of course, and this factor was especially evident during 1917 and 1918. The relative cost of the rubberization of clothing is of little importance as compared with that of the fabrics and labor employed. Moreover, the cost of rubberization did not increase to any appreciable degree in the past six years. The price of fabrics employed, on the other hand, increased from 12 to 48 per cent, varying with the individual types of coats; while other costs such as labor, trimmings, etc., which comprise the largest part of the expense of production, rose from 47 to 78 per cent.

The following table shows the respective increases in the cost of the nine types of coats, the average relative prices of which are shown in Figure 6.

TABLE IV.—INCREASED COST OF RUBBER CLOTHING, 1913-1918.

	Per cent of increase.		
	Rubber compound.	Fabric.	Other items.[11]
Coat I	13.5	21.0	65.5
Coat II	16.0	22.0	60.0
Coat III	12.5	30.5	57.0
Coat IV	13.0	28.5	58.5
Coat V	10.0	32.5	57.0
Coat VI	6.0	29.0	64.0
Coat VII	6.0	45.0	48.0
Coat VIII	5.0	48.0	47.0
Coat IX	9.0	12.0	78.0
Average	10.1	29.8	59.6

DRUGGISTS' SUNDRIES.

This class of rubber products, like that of rubber footwear, experienced but few price changes prior to 1916. In fact, the price of water bottles, with the exception of a slight drop of two per cent in 1914, remained unchanged until April, 1916, when it started a rise which ended in the middle of 1918. Ice bags, on the other hand, changed but little in value during the period prior to America's entrance into the war, the low price of 1914 having remained relatively static until June, 1917. The demands of the Red Cross and the Medical Department of the Army stimulated prices at this time, bringing a rise which had been a long time due. (See Figure 7.)

CONCLUSION.

A review of the run of prices for the rubber industry as a whole—that is, for crude rubber, ingredients, and rubber products combined—as presented in the Figure 2, makes apparent the fact that with the exception of the 16 months ended January, 1915, the rubber industry price situation had little in common with commodities in general. Low prices characterized the industry by and large. During the six years dealt with in this study there were only 12 months in which the index number of the rubber industry was higher than that of "all commodities,"

[11] Includes findings, trimmings, waste, packing, labor, overhead, profit and loss. Data from confidential source.

and in all but four of these instances variations above the general price level were less than 10 per cent. In February, 1915, rubber prices fell 16 per cent below the level of all commodities, and from that time on the index numbers of the rubber industry and of commodities in general followed individual courses. The latter, after remaining relatively static for some nine months, ascended rapidly, reaching its first apex in July, 1917, at a point 89 per cent above the level of February, 1915. The governmental policy of price-fixing inaugurated in the summer of 1917 resulted in a slight recession, which continued until June of the following year, when the upward course of prices was resumed. The year 1918 ended with the index number of all commodities 103 per cent above its pre-war level.

The index number of the rubber industry, on the other hand, followed a rather slow upward course, which was interrupted now and then by cycles of depression varying from 1 to 10 months in duration. At no time did it approach the index number of "all commodities," and throughout the period following February, 1915, the price level of the rubber industry was at least 16 per cent below that of commodities in general. This difference in levels was highest in July, 1917, when the "all-commodities" index number was 80 per cent above that of the rubber industry. Throughout 1917 and 1918, in fact, the divergency existing between the two levels was one of great significance and is to be found in the price fluctuations of but few industries. The signing of the armistice found the price level of the rubber industry 72 per cent below that of all commodities, or, in other words, 31 per cent above its own level of 1913-1914.

Influences Operating on the After-the-War Demand for Rubber Goods.

By L. W. Alwyn-Schmidt.

GREAT EVENTS of such an elementary force as a world's war must result in an upheaval of all the ordinary standards of life. Progress advances at a higher speed than during normal times and the world experiences the evolution of a century in the comparatively short space of a few years. The period which divides us to-day from the advent of the war is still too short to enable us to realize fully what it has done to hasten industrial and economic progress. As yet we have not had a chance to draw the balance of loss and gain. It certainly has had a powerful influence upon inventors in all countries. As to the rubber industry, it has so far been unable to utilize synthetic rubber, but the field of application for the genuine article has widened materially and the rubber industry emerges from the war as a powerful factor in the economic life of the world.

This development cannot fail to exert a strong influence on our domestic rubber industry in its relation to both home and foreign markets. Considering the enormous strides made by the American rubber industry in the expansion of its foreign influence, it is the effect upon foreign markets which will undoubtedly receive the greatest attention from our manufacturers. The average manufacturer or exporter is inclined to look upon foreign trade as a matter of orders and delivery. The great economic factors operating in the world's markets do not apparently concern him and he does not trouble about the development of favorable trade prospects. This policy has been especially noticeable in our own country. It has marred for a long time our politically and economically desirable trade relations with South America and it is again interfering very seriously in our relationship to our former allies in Europe. It is, however, the comprehensive understanding of the present and future requirements of a market which develops the successful exporter. Only the manufacturer who makes himself useful to his customer can expect to acquire his permanent confidence. It is, therefore, necessary that American rubber manufacturers should be conversant with the economic tendencies underlying the development of markets for American rubber goods.

OUR PAST PROVINCIALISM.

The American rubber industry can easily be called the most powerful and progressive of the rubber industries of the world. No country has provided during peace times so many difficult problems for the rubber chemist and engineer than our own and it is only our somewhat provincial habits which have prevented the American rubber industry from taking first place as an exporting industry in the years before the war. Matters have now changed. We have been forced to take a hand in international affairs and the rubber industry was burdened with an unusual load of foreign orders which cost a great deal of exertion to fill. In the future we shall receive automatically a share of the export business of the world and this will be measured more or less by the general ability of our industry to supply the demand. This share in foreign trade flows as a natural result of international trade exchange to any leading industry of any country. It is the tribute due to the existence of a powerful economic producer. The successful exporter, however, cannot wait to let others determine his share of the business of the world, and by making use of the existing opportunities obtains a larger proportion of the trade. And such opportunities are now especially numerous. They have arisen as the result of the war.

RUBBER IN DRY COURSING.

It is not always easy to recognize favorable market developments in their early stages. Often we cannot determine with certainty what particular consequences will follow a certain event. But there are at present many so-called fundamental economic causes which must lead to an extensive business for the rubber industry of the world. Only a few can be mentioned in the space of a short article. There is a considerable shortage of houses in England, and in fact, all over the world. It is estimated that England will have to build 500,000 dwellings within a few years. France may require even more. And we can estimate conservatively that several million houses will be erected all over Europe in the near future. All these houses require dry coursing and waterproof roofing. This question of dry coursing is still in its initial stages. In England slate is frequently used for the purpose. But the old houses in Europe were often entirely without dry courses, resulting in damage to the masonry caused by the infiltration of water. Shortly before the war a proposition was made to use rubber for this purpose. The advantages of rubber sheets laid along the fundaments were obvious. Rubber is absolutely damp proof, it would stretch in case the fundaments settled and will not break like slate, and, moreover, the cost was not materially higher. The building of a large number of houses offers the rubber industry an opportunity to manufacture dry course material. Large strips of rubber, 1 to 2 feet wide and ½ or ¾-inch in thickness, are required. Figuring at the basis of 30 yards of material for each house, the very small English workmen dwelling being considered, the English consumption of that kind of dry course sheeting would amount to 15 million yards alone, not to speak of the large demand which might be developed on the European continent. Some advertising would be of course required to acquaint the build-

ers with the material and also to educate the public to demand its use in the new buildings.

FIBER SOLES IN EUROPE.

In the early stages of the war, to give another example, the writer had a hurry call from Switzerland for American composition soles made from rubber or any other material. A similar call came from Rumania a few weeks later. In both instances the fact was communicated to a number of American rubber firms likely to handle a large development of this kind, but only one firm made use of this opportunity. Before the war it was difficult to convince the European public of the usefulness of rubber heels and soles, or any other waterproof leather substitutes. The few firms which imported these goods in Europe did not do a very large business because European opinion was generally adverse to the use of anything but leather in footwear. Leather has become exceedingly rare in Europe and shoe prices have mounted to figures which would be incomprehensible even in our own country. Composition materials have been introdced quite generally and great numbers of the European population have reconciled themselves to wearing them. We have made great progress in this country during the last few years in the production of rubber soles and heels and our manufacturers might find it well worth their while to study the European situation for the purpose of making a profitable use of its opportunities.

AMERICAN TIRES FOR EUROPE.

As a third example the automobile industry may serve. This industry, though highly developed in Europe, is comparatively a small factor in the American market. It is reported that the European automobile industry will start building small passenger and carrier automobiles on American lines, adopting, if possible, the design of American rims and tires. The outcome will be a greater demand for small American tires, not only in Europe but in other parts of the world where European automobiles will be sold.

All three tendencies, and there are many more to be found under the cover of the present industrial reorganization, have not come about spontaneously. They are rather the result of a slow evolution of earlier causes. The war, however, has hastened the development and has made a necessity out of what was five years ago only a convenience. It has cost the makers of rubber heels and soles thousands of dollars to make the public acquainted with the advantages of wearing rubber heels and the educational campaign is still going on in this country. In Europe, the war has acted as an educator in this respect and Europe is now ready to accept the leather substitutes made of rubber or any other material. The same refers to building material and automobile tires.

FOREIGN OPPORTUNITIES IN RUBBER.

But the evolution now taking place in favor of employing rubber is not confined only to building materials, wearing apparel and automobiles. It is prevalent in medical and surgical appliances, the electrical industry, plumbing, steam and industrial engineering, and the large circle of domestic industries where the guiding hand of the rubber manufacturer is required to make a fact out of what at the present time may only be a tendency. There is hardly a rubber manufacturer in this country who has not been asked during the last five years whether a certain article might be made with advantage from rubber. Many of these inquiries have been turned down, not because they were unsuitable but because the factories were too busy to consider them. In many instances the desired articles have been manufactured, but their use has not extended beyond their particular field. Now is the time to follow up these leads; the inquirer should again be approached and his particular requirements investigated. The work will fall principally to rubber manufacturers specializing in certain articles or to the special departments of large enterprises. This will be an advantage as the investigation will be conducted by men competent to give the new proposition its best chance for a complete success.

As to the foreign side of this evolution in the demand for rubber goods our industry will find plenty of material. The need of the foreign consumer for the employment of new materials is very great. No doubt much of the business which would have fallen to our manufacturers if they had taken hold of these suggestions early during the war, will now flow in the direction of foreign rubber manufacturers who are just as keen to take hold of any new development, but a good deal should still be left to pay for the trouble of making the necessary experiments. It is not as a rule very difficult to perfect a technical process or an implement of some sort if once its usefulness has been established. But it requires much astuteness to introduce its use generally and thereby make the article worth its industrial production.

The influence of this present development on our foreign trade will soon show. We should witness a rapid growth in the demand for many articles new to the industry and those which have been in less demand in former years. Upon the ability of our industry to forestall this development and to direct it in channels favorable to our own manufacturers, the future success of the American rubber industry in new markets will depend.

THE MILEAGE GUARANTIES INCREASE.

Following the recent reduction of pneumatic tire prices on the part of several leading companies comes a more or less general increase in mileage guarantees and adjustment basis for tires ranging from about 30 to 75 per cent of the previous guaranties. The movement was started by The B. F. Goodrich Co. and its subsidiary, the Diamond Rubber Co., and a canvass of the trade shows to what degree other companies are falling in line:

Make.	Kind.	Former Mileage Guaranty.	Present Mileage Guaranty.
Diamond	fabric	3,500	6,000
Diamond	cord	5,000	8,000
Federal	plain tread	4,000	6,000
Federal	"Rugged" tread	5,000	7,000
Federal	cord	6,000	8,000
Firestone	fabrics	3,500	6,000
Firestone	cord	.....	8,000
Fisk	"Red Tops"	4,000	7,000
Fisk	cord	.....	8,000
General	"Jumbo"	.....	7,500
General	cord	.....	7,000
Goodrich	fabric	3,500	6,000
Goodrich	cord	5,000	8,000
Keystone	fabric	4,000	6,000
Norwalk	"Ford-size"	5,000	7,500
Racine	non-skid fabric	5,000	6,000
Racine	cord	7,500	8,000
South Bend	.....	.....	7,000
Stronghold	Ford sizes	.....	7,500
Stronghold	Other sizes	.....	6,000

Several companies have made no change because their mileage basis was already high enough. A few of the larger firms give no mileage guaranty as a basis of adjustment, preferring to adjust claims on poor material or defective workmanship in the individual case. This method, they believe, gives greater satisfaction than setting a fixed scale which is often inapplicable to the case in hand.

About five years ago an unlimited guaranty covering the full life of the tire was adopted for Goodyear passenger-car tires, and that form of guaranty has now been extended to solid and cushion tires. No matter how far a Goodyear tire has been driven, whether it be 5,000 or 50,000 miles, or how long its period of service, a fair and equitable adjustment will be made if it proves defective.

FRAZAR & CO. BUY NEW YORK BUILDING.

Frazar & Co., a firm well known to the rubber trade through its chemical department, which supplies the "States" brand of antimony, zinc oxide, magnesia, etc., has recently purchased the Trinity Court Building at 72-76 Trinity Place. This will be known as the Frazar Building and after extensive alterations will be occupied by Frazar & Co. for their New York offices.

Echoes of The Great War.

RESUMPTION OF TRADE WITH GERMANY.

EFFECTIVE JULY 14, 1919, it was announced by the War Trade Board Section of the Department of State that a general enemy trade license had been issued authorizing all persons in the United States to trade and communicate with persons residing in Germany and to trade and communicate with all persons with whom trade and communication is prohibited by the Trading with the Enemy Act, except those in Hungary or that portion of Russia under the control of the Bolshevik authorities.

The above-mentioned general license does not authorize the importation into the United States from Germany or elsewhere of dyes, dyestuffs, potash, drugs or chemicals which have been produced or manufactured in Germany; nor does it authorize trade with respect to any property which heretofore, pursuant to the provisions of the Trading With the Enemy Act as amended, has been reported to the Alien Property Custodian, or should have been so reported to him, or any property which heretofore, pursuant to the provisions of said act, the Alien Property Custodian has seized or has required to be conveyed, transferred, assigned, delivered or paid over to him.

Exports to and imports from Germany may now take place under Special Export License RAC No. 77 and General Import License PBF No. 37.

FEDERAL INCORPORATION OF AMERICAN FOREIGN TRADE FIRMS.

The bill to permit the Federal incorporation of companies engaged in foreign trade that has been introduced in Congress with the approval of the Government, the National Foreign Trade Council, and other organizations, is of much moment to the rubber industry, which necessarily involves international relations to a considerable degree.

Our state incorporation laws vary so greatly and change so frequently, and court procedure and decisions differ to such a degree as to be so generally distrusted abroad, that it is often difficult to secure investment of foreign capital in American companies organized under these laws.

Federal incorporation of American concerns doing business abroad would lend the confidence and prestige of the federal name and authority to our foreign traders, and nothing is as important to foreign trade as mutual confidence.

It is highly desirable that firms abroad made up of Americans, but depending largely upon foreign money for their capital, be permitted to do business under the American flag in such a way as to attract the investment of foreign money. This investment in American concerns would inevitably lead to the purchase of American goods, and would therefore be of the greatest value in aiding the growth of American foreign trade.

COUNCIL OF NATIONAL DEFENSE TO CONTINUE.

The war has shown conclusively the country's need of a governmental agency that shall in time of peace collect, study and centralize in a scientific way all information bearing upon the national defense, particularly with regard to the mobilization of industries, science, and labor in time of war.

The United States Council of National Defense, created nearly a year before America entered the war, is such an agency, and the amount of constructive work it has accomplished with an expenditure of only $1,574,000 up to May 1, 1919, has been truly remarkable.

Under the Sundry Civil Bill there has been reappropriated to the Council of National Defense its unexpended balance for the fiscal year 1918, and the Council is now maturing plans to return to its peace-time functions. During the war the Council has been in effect an administrative laboratory and clearing house of study and action in matters touching the national defense. Broadly speaking, it purposes to continue under the same policy.

With the closing of the work of the Capital Issues Committee, the Committee on Public Information, the Food Administration, the Fuel Administration, the War Industries Board, and the War Trade Board, the Council remains the single interdepartmental unit which can centralize the study of the records established by these war agencies. It will undoubtedly become in effect the residuary legatee of these war agencies to the extent that their records are not allocated to the executive departments.

The Council of National Defense is composed of the Secretaries of War, Navy, Interior, Agriculture, Commerce, and Labor. With it throughout the war acted an advisory commission of seven members, composed of Daniel Willard, Samuel Gompers, Bernard M. Baruch, Howard E. Coffin, Julius Rosenwald, Dr. Franklin Martin, and Dr. Hollis Godfrey.

WASTE RECLAMATION IN AKRON, OHIO.

Waste reclamation, a war-time concept, has become a peace-time development that promises eventually to accomplish much good throughout the country by inculcating habits of individual and corporate thrift. The plan was originated by the Commercial Economy Board of the Council of National Defense, but its successful operation is attributable to the activity and interest of George W. Sherman, manager of the salvage department of The B. F. Goodrich Co., Akron, Ohio.

Fostered by 75 per cent of the industrial capitalization of the community, the Akron Industrial Salvage Co., capitalized for $25,000, was incorporated in May, 1918. It was not a movement for profit but for betterment and the company has operated on the theory that waste material often has a value in use far greater than its value in price, and that nothing of use in industry should be destroyed.

In order to assist other communities in organizing similar companies, the development of a short, intensive training course for salvage executives, to be conducted by one of the local colleges, is contemplated by the Waste Reclamation Council of Akron, and the feasibility of a full-year course of salvage engineering for senior college men is also under consideration.

The waste-saving work is still in its infancy but it is safe to predict that this civic improvement company will make a contribution to the movement for national waste reclamation as fundamental as that of National Waste Products, Limited, in England, a government corporation operated on strictly commercial lines.

BELGIUM GETS BACK HER MACHINERY.

Belgian machinery, stolen by the German invaders, is being returned by them at the rate of some 3,000 tons weekly. The total amount returned on July 1 was 18,000 tons and there is much more to come. The law of righteous retribution is still in existence.

AMERICAN RUBBER COATS IN GERMANY.

Rubber coats were among the first goods offered by American manufacturers to Germany, according to the "Deutsche Allegemeine." This newspaper states that the initial result of the raising of the blockade is the flooding of Cologne with foreign goods, and that America and France were among the first in this trade.

IT IS TO YOUR BEST INTEREST TO PUT YOUR LIBERTY BOND INTEREST in War Savings Stamps.

Tire Rebuilding and Repairing—II[1].

TIRE REPAIRING OPERATIONS.

REMOVING THE TREAD.

THE WORN TREAD, breaker strip and cushion stock down to the fabric are completely removed with a sharp knife, and the exposed edges of the side-wall gum are skived or beveled, care being taken to avoid cutting into the fabric. The side walls are allowed to remain intact unless defective, in which case they also must be removed in the same manner, together with the chafing strip. If the tread is so badly cut that it is difficult to skin, a buffing machine equipped with a rotary rasp will be more effective than the knife. The casing is next reversed to expose the inside and carefully examined for weak places. For small inside repairs two tire jacks or "reversers" will hold the beads open while the work is being done and obviate the necessity of reversing the entire casing. All fabric, bead, and side-wall damages are then treated by the usual methods of tire repairing and vulcanizing, quite irrespective of the retreading to follow.

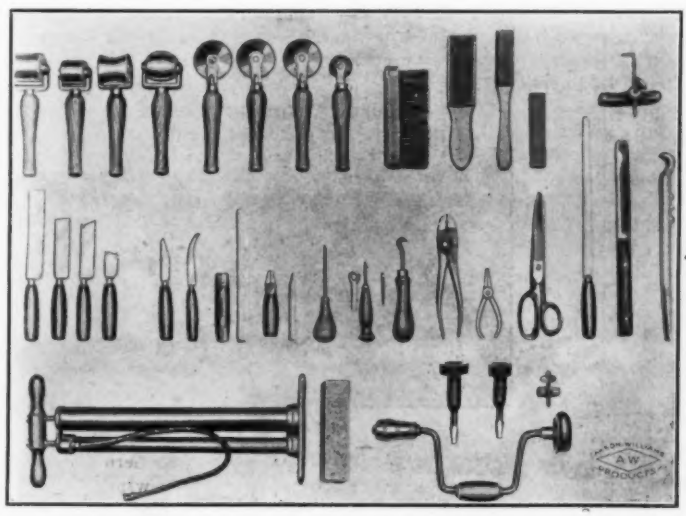
TIRE-BUILDING LASTS OR MANDRELS.

BUFFING.

When the fabric or cord repairs have been completed, all particles of old rubber and dirt are removed from the outside of the casing by means of a buffing machine equipped with a rotary wire brush which also roughens the surface of the fabric. All rubber dust and loose fabric particles are dusted off with a whisk broom or fine hand-brush, when the casing is ready for retreading, unless recovering of one or both side walls is necessary.

RECOVERING.

If the side walls of the casing are damaged to such an extent that a small local repair after the well-known manner is not sufficient, the damaged side wall or walls and corresponding bead or chafing strip will have been removed with the tread, and the casing must first be recovered. Two or three coats of vulcanizing cement are applied to the well-buffed fabric of the carcass as needed, each coat being allowed to dry separately. The bead strip is first replaced with an 8 ounce fabric frictioned two sides, lapping 1 inch on the outside and 1½ inches on the inside. The side walls are next applied, using one ply of black, white, gray, or red unvulcanized gum of proper thickness—usually 1/16 or 3/32-inch—and wide enough so that the tread when put in place will overlap 1 inch. Careful rolling to eliminate all air blisters is essential.



TOOLS USED IN TIRE REBUILDING AND REPAIRING.

RETREADING.

There are at the present time four principal methods of retreading tires in common use. They are as follows:

1. Building up the tread of unvulcanized rubber, wrapping and curing in a pot heater or kettle vulvanizer. If a ribbed tread is desired, the cure is effected in a retread mold.

2. Using a "camel back" tread gum specially prepared in one piece to proper thickness, and then curing in a kettle.

3. Applying endless semi-cured retread bands with beaded or non-skid treat designs, filling around the raised parts of the tread with soap-stone mortar, or using a negative wrapping pad, wrapping and curing in a kettle vulcanizer.

BUFFING THE CASING.

4. Supplying a new tread by any of the foregoing methods and vulcanizing in sections by three or four cures in a cavity retread mold.

BUILDING UP AND APPLYING THE TREAD.

To the buffed outside surface of the casing two or three coats of vulcanized cement are applied as needed, permitting each to to dry thoroughly. From one-half to one hour must be allowed for the first coat or coats and from two to five hours for the last coat. A longer time is required in cold damp weather than in warm dry weather.

Cord tires require not less than three coats of cement, each being allowed to dry separately. The first coat should be a thin solution that will soak into the roughened cords, the second and third coats medium heavy solutions. The first two coats must be allowed to dry at least one hour and the third coat from six to twelve hours. Over night is usually convenient and sufficient.

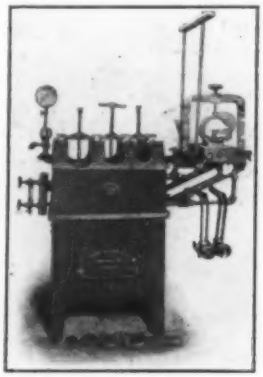
When the cement is thoroughly dry, a strip of cushion stock, usually 1/64 or 1/32-inch in thickness, and wide enough to cover the cemented surface completely or within an inch on either side, is applied.

[1]Continued from THE INDIA RUBBER WORLD, July 1, 1919, pages 552-553.

Above the cushion stock is laid the breaker strip of coarsely woven fabric frictioned and coated on both sides, and rolled firmly into place with a hand roller. To prevent air pockets, the edges of the breaker strip are bound with half-inch strips of cushion stock rolled down firmly. The breaker strip is of great importance to the tire. It prevents separation of the tread; obviates the formation of mud boils, and reduces the possibilities of fabric breaks resulting from stone bruises.

The tread is next applied. First, however, it must be built up with three or four strips of black, white, gray or red unvulcanized tread gum of suitable width and length sufficient to reach around the entire circumference of the casing. In building up the tread the second widest ply, ¾-inch narrower than the widest ply, is placed at the bottom. Above this are placed the required number of piles, each ¾-inch narrower than the one beneath it, until finally the widest ply is placed at the top. Each ply is rolled down securely as laid with a flat hand-roller and all air blisters removed by pricking with an awl.

In applying the tread to the casing the second widest ply is brought into contact with the breaker strip, the tread is carefully centered all around and pulled tight to prevent wrinkles. It is then rolled down with a hand-roller or a tread-rolling machine, all air blisters being pricked with an awl. The edges of each tread ply are stitched down with a rotary wheel-stitcher, and the splice trimmed off even with the surface of the tread.



Sectional Vulcanizer.

"CAMEL BACK" TREAD GUM.

To obviate the necessity of building up treads as needed, there is a specially prepared unvulcanized tread gum called "camel back," because it is built up to a hump in the center where the thickness is needed. This requires only to be cut off to the desired length; waste is thus reduced to the minimum and ply separation, low spots, and air blisters are obviated.

Manufacturers also supply endless retread bands with ribbed and non-skid designs in all standard sizes to be applied instead of built-up or "camel back" treads.

VULCANIZING THE COMPLETE REPAIR.

Plain retreads, retread bands, relines, recovers and rim cuts entirely around are all vulcanized in a pot heater, also known as a kettle vulcanizer, or in a retread mold. In the case of a pot heater a complete air-bag or an endless retreading coil is first placed in the casing. Complete air-bags made of specially treated gum and wound with fabric will give from 100 to 300 cures. Endless retreading coils will last indefinitely. They are made of tempered hard steel flat wire, long enough to accommodate casings of any diameter, and wound so that they may be opened or closed to fit the different diameters. To insure a perfectly smooth surface, a fabric pad should be wound around the coil.

Adjustable cast iron or aluminum segment cores are often used instead of air-bags or coil springs. They are the exact size and shape of the inside of the tire. Each segment is ½-inch thick at the inside and ⅝-inch at the outside, making them conform solid to the circle of the average tire. A sufficient number of these segments is strung on two wires to go nearly around the casing, and the adjustment between the different casings is made by using more or less segments. Where the coil springs gaps apart to conform to the diameter of the casing, these segmental cores lie close together so that the casing can neither shrink nor stretch in curing.

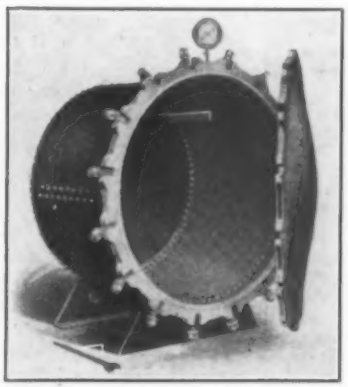
Split curing rims, with clincher or straight-side beads as required, are next put in place upon the casing and the two sides clamped securely together by bolts. A strip of wet muslin cut on 45 degrees bias is stretched around the casing as a surface liner, and over this a heavy wet jacket. In the case of a re-covered tire the light muslin jacket is put on before the curing rims.

The tire is next cross-wrapped with wet strips of 8-ounce fabric 2½ inches wide. The wrapping should be even and very tight to insure uniform pressure, particularly on the side walls of the casing, and to help the beads hold correct shape. The wrappings are wound completely around the casing in one direction and then the operation is reversed and the entire casing wrapped in the opposite direction. For convenience in working, these strips of fabric are previously rolled like surgeon's bandage, either by hand or with one of the several rag rollers on the market.

If an air-bag is used instead of coils or segmental cores, it is inflated to 70 pounds pressure, and the casing is finally cured in a kettle vulcanizer. Common cures are 45 minutes at 35 pounds steam pressure, and 40 minutes at 40 pounds.

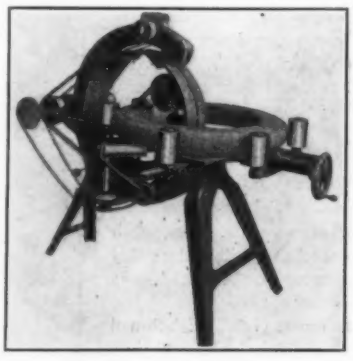
IN CONCLUSION.

It seems unlikely that the price of tires will soon reach pre-war levels. This, together with the greater spirit of thrift engendered by the war, means that rebuilt tires will be used more and more; that tire rebuilding has become and will continue to be a great and growing business. Some 6,000,000 automobiles are now in use in the United States and the number increases enormously every year. Allowing five tires to each car, four in use and one spare, it is seen that some 30,000,000 tires are now in use. Of these, probably one-third, or 10,000,000, could be rebuilt annually.



Horizontal Retreading Vulcanizer.

Kettle or Pot Vulcanizer.



Wrapping Machine.

HOW NEW YORK AND LONDON CRUDE RUBBER IMPORTS ARE HANDLED.

NEW YORK METHOD.

The method employed in handling crude rubber imports in New York differs from the London method in that the rubber, if unsold, is handled by the owner or consignee instead of the broker.

When the rubber is discharged from the vessel or cars the owner's dock man samples 10 per cent of each mark. These samples are used to represent the lot as a whole, or the individual marks when sales are being effected, the rubber being stored at one of the numerous warehouses in or near New York.

When the rubber has been sold before arrival to manufacturers, the same process of examination and sampling takes place, the rubber being forwarded to the factory direct from the dock.

When sold between importers or dealers it is the usual custom for the buyer's representative to meet the representative of the seller and together make the examination of 10 per cent of each mark. If the buyer is not satisfied with the examination, he can demand a more thorough or full examination, the expense of which beyond the 10 per cent is borne by the buyer. This joint examination and passing the weigher's scales constitutes a good delivery from which there is no appeal.

When rubber is sold "to arrive," but more particularly in the case of the grades other than the standard, it is customary to deposit with the broker, if the sale is made by a broker, all or part of the sample, which the broker seals and holds against possible dispute as to quality.

Should dispute arise an arbitration is held under the rules of the Rubber Trade Association, of New York, the result of which is final, but with right of appeal to be heard by the full Arbitration Committee, from whose decision there is no appeal.

Terms upon which rubber is sold to manufacturers are based

(C) Underwood & Underwood, N. Y.

Crude Rubber Samples.

upon net cash in 10 days from the date of delivery on the dock or ex-warehouse. Terms between importers and dealers are cash less 10 days' interest at 6 per cent per annum.

LONDON METHOD.

Formerly all plantation rubber went to London and in the early days, the planters, or many of them, sent their product to their London secretary, just as it was produced, all the grades being mixed together. The secretary turned it over to his special broker who had it assorted, classified, and the samples of the different grades displayed in his salesroom where intending buyers could examine them, take the catalog number, and prepare for the auction. At the auction each broker personally auctioned off his own lots as his turn came. Private sales were also made before the auction.

(C) Underwood & Underwood, N. Y.

Weighing Crude Rubber Shipments at New York.

At the present time the same method is continued excepting that there are no auctions and it is all done by private tender.

When a consignment of spot rubber reaches the docks, each lot is examined, weighed, and classified according to color, thickness and quality. Samples weighing from one to five pounds are taken by experts, each sample being stamped by public officials. These samples, which represent the average quality of the lots, are placed in bags to be sent to the brokers' sales rooms. Intending purchasers have the right to go to the docks and examine the whole consignment, but as a matter of fact, they never do so, as the samples are absolutely reliable.

Sales are made for cash within fourteen days after the Wednesday following the day of the sale. Buyers, therefore, have their entire purchase in their factories before they make any payment. A considerable portion of the rubber traded in is sold on forward contracts for delivery within 3, 6, or 12 months, so that purchasers can be sure of having their rubber at a fixed price for a certain time ahead. Some of these forward contracts are free on board, the rubber going straight from the grower to the factory; other contracts specify London delivery. In either case, the Standard Qualities Committee of the London Rubber Trade Association is the arbiter in the case of any difference of opinion as to the quality of the shipments.

The London broker, in addition to accomplishing the sales, guarantees the credit of the buyer to whom he sells and actually handles the rubber, with the attendant expense, whereas the New York broker assumes no responsibility after the passing of the contract.

RUBBER DIVISION MEETING OF AMERICAN CHEMICAL SOCIETY.

The autumn meeting of the American Chemical Society will be held at Philadelphia, Pennsylvania, September 3-6, 1919, when the first meeting of the newly organized Rubber Division will also be held. Final arrangements for the program are not yet completed; however, the interest shown promises a very interesting meeting.

Balanced Packing-Box Construction.

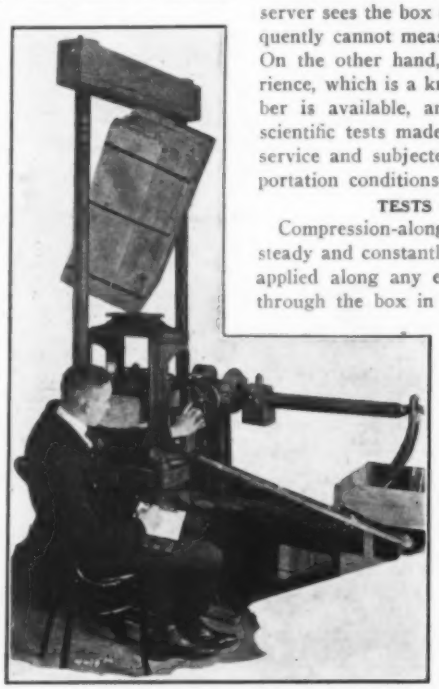
THE INVESTIGATIONS of balanced packing-box construction and tests to determine box design conducted during the war by the Forest Products Laboratory[1] contributed in marked degree to the safe and economical movement of munitions and supplies to the American Expeditionary Forces. Immense monetary savings were effected by the correct construction of containers as to materials used, cargo space conserved, and reduction of loss by breakage of packages.

The methods employed to attain these results are now available for general commercial purposes through the services and publications of the Forest Products Laboratory, which continues to investigate the resources of forest products in their relation to many important industrial developments too numerous to mention.

IMPORTANCE OF BOX INDUSTRY.

The importance of the box industry is but little appreciated. United States Forest Service data shows that the manufacture of packing boxes, shooks, crates, crating, fruit and vegetable packages and baskets, is the second largest wood-consuming industry in the United States, and that in 1912, 11.6 per cent of all lumber produced in the country was converted into boxes.

There are innumerable special demands for boxes and crates, but on the whole it is the manufacturing industry and intensive fruit-raising and market-gardening which creates the demand for boxes.



DIAGONAL COMPRESSION TEST.

WHAT IS A GOOD BOX?

A properly designed packing box has enough strength in each part for the intended purpose and no more strength in any part than is necessary to balance the average strength in every other part. The data for designing such a box cannot be obtained from observation in actual commercial service, because the observer sees the box only after it has completely failed and consequently cannot measure the hazard which completes the failure. On the other hand, laboratory studies combine practical experience, which is a knowledge of the designs in use, of what lumber is available, and of box factory practices, with accurate scientific tests made on the package itself, packed as in actual service and subjected to strains that approximate actual transportation conditions.

TESTS TO DETERMINE A GOOD BOX.

Compression-along-an-edge test, as its name implies, is a steady and constantly increasing pressure (measured in pounds) applied along any edge and with the opposite edge diagonally through the box in direct line with the pressure exerted. The corner-wise test is applied in the same way to any corner of the package with the opposite corner in a direct line with the pressure. These two tests measure the strength of the box in withstanding any external pressure and to a limited extent approximate the hazard of the lower tiers of boxes in a pile. By themselves these tests are insufficient to determine comparative weaknesses in the various factors that enter into properly balanced construction.

Another is the drop test, for comparing the strength of one box with that of another. The box is packed with the actual contents as in service and dropped from a predetermined height directly on the corner, which is a fall that occurs in actual service. The value of the conclusions is limited, however, because one failure runs so rapidly into another that the observer does not always get the true measure of the weaknesses.

EXTERIOR VIEW OF 14-FOOT DRUM BOX-TESTING MACHINE.

INTERIOR VIEW OF DRUM, SHOWING PACKAGE CONSTRUCTION TEST.

The most practical method yet devised is the revolving drum

[1]United States Department of Agriculture, Forest Service, Madison, Wisconsin. (In cooperation with the University of Wisconsin.)

test. The drum is a hexagon-sided machine and revolves slowly. The box is packed with the actual contents, as in commercial service, and placed in this drum. In the drum are arranged a series of hazards, which cause the box to follow a regular cycle of drops, falling upon sides, top, bottom, ends, edges, corners, and flat-wise upon a projection similar to the corner of another box. These drops simulate the usual hazards of transportation, excepting the heavy static pressure received by a box in the lower tiers of a pile, which is secured by means of the compression-on-edge test previously described.

As the box moves on from one drop to the next the observer notes the beginning of the failure of the weakest point in its construction and follows the development of that weakness until the box entirely fails and lets its contents out.

The weak feature of the box may be too few nails, nails of too short a length, nails driven in a crack and thus having no great holding power, or some other form of nail failure; and the tests clearly show this weakness. The material in the sides, top,

TESTING LAMP CONTAINERS IN SIX-FOOT DRUM.

or bottom may be too thin, so that the shocks of the falls pull the wood from the nails. The wood may split or break across the grain.

Any one of the numerous weaknesses of packing-box construction may be developed in this test until finally the observer is able to build up a box that is practically equally strong in every feature. Boxes are then built, packed, and tested until the presence of this balance in design is clearly demonstrated. Such a demonstration will show failures ultimately occurring in average proportion in nails pulling from the wood, wood pulling from the nails, splitting or breaking of ends, sides, tops or bottoms, and through the weaknesses of the species themselves.

AIDS IN BOX DESIGNING.

As a result of many box tests no general rules can be laid down, for the reason that each box must be built with reference not only to the external shocks it will have to endure, but also to the nature of the article it is to contain.

QUALITY AND CONDITION OF LUMBER.

Boxes should be manufactured from lumber which is sound, free from decay and dote, and well-seasoned. The average moisture content of the wood should be from 12 to 18 per cent, based on the weight after oven-drying.

The effect on the strength of the box caused by the moisture condition of the lumber and the change of moisture condition in storage is very marked, the strength relation showing a variation in the holding power of the nailing from 10 to 100 per cent.

INTERCHANGEABILITY OF SPECIES COMMONLY USED FOR BOXES.

The results of the drum tests have made it possible to divide the kinds of wood generally used in packing boxes into the four groups shown in the following table. Thus, any wood in one group substituted for any other wood in the same group and built into a box of the same specifications would give practically the same results in commercial service.

APPROXIMATE AVERAGE WEIGHT OF VARIOUS SPECIES OF WOODS USED IN PACKING-BOXES.

Species.	Thickness in Inches. 3/16	1/4	5/16	3/8	1/2	5/8	7/8	1
Group I.	Pounds per square inch surface measurement.							
White pine	.014	.013	.012	.0098	.0078	.0059	.0049	.0039
Norway pine	.017	.016	.015	.012	.0098	.0074	.0061	.0049
Aspen	.014	.013	.012	.0098	.0078	.0059	.0049	.0039
Spruce	.014	.013	.012	.010	.0081	.0060	.0050	.0040
Western yellow pine	.013	.012	.011	.0094	.0075	.0056	.0047	.0038
Cottonwood	.015	.014	.013	.010	.0084	.0063	.0052	.0042
Yellow poplar	.014	.013	.012	.010	.0081	.0060	.0050	.0040
Balsam fir	.013	.012	.011	.0094	.0075	.0056	.0047	.0038
Chestnut	.015	.014	.013	.011	.0087	.0065	.0054	.0043
Sugar pine	.014	.013	.012	.0098	.0078	.0059	.0049	.0039
Basswood	.013	.012	.011	.0094	.0075	.0056	.0047	.0038
Cypress	.017	.016	.015	.012	.0098	.0074	.0061	.0049
Willow	.014	.013	.012	.010	.0081	.0060	.0050	.0040
Noble fir	.014	.013	.012	.010	.0081	.0060	.0050	.0040
Magnolia	.018	.016	.015	.013	.010	.0076	.0063	.0051
Buckeye	.013	.012	.011	.0091	.0072	.0054	.0045	.0036
White fir	.013	.012	.011	.0094	.0075	.0056	.0047	.0038
Cedar	.016	.015	.013	.011	.0090	.0067	.0056	.0045
Redwood	.013	.012	.011	.0091	.0072	.0054	.0045	.0036
Butternut	.014	.013	.012	.0098	.0078	.0059	.0049	.0039
Cucumber	.017	.016	.015	.012	.0098	.0074	.0061	.0049
Alpine fir	.012	.011	.010	.0083	.0067	.0050	.0041	.0033
Lodgepole pine	.015	.014	0.13	.010	.0084	.0063	.0052	.0042
Group II.								
Southern yellow pine	.020	.019	0.17	.015	.012	.0087	.0072	.0058
Hemlock	.015	.014	.013	.010	.0084	.0063	.0052	.0042
Virginia and Carolina pine	.020	.018	.017	.014	.011	.0085	.0071	.0057
Douglas fir	.017	.016	.014	.012	.0096	.0072	.0060	.0048
Larch	.019	.017	.016	.013	.011	.008	.0067	.0054
Group III.								
White elm	.017	.016	.015	.012	.0098	.0074	.0061	.0049
Red gum	.018	.016	.015	.013	.010	.0076	.0063	.0051
Sycamore	.018	.016	.015	.013	.010	.0076	.0063	.0051
Pumpkin ash	.019	.017	.016	.013	.011	.0080	.0067	.0053
Black ash	.018	.017	.016	.013	.010	.0078	.0065	.0052
Black gum	.018	.017	.016	.013	.010	.0078	.0065	.0052
Tupelo	.019	.017	.016	.013	.011	.0080	.0067	.0053
Maple, soft or silver	.017	.016	.015	.012	.0098	.0074	.0061	.0049
Group IV.								
Hard maple	.022	.020	.019	.016	.013	.0095	.0080	.0064
Beech	.022	.020	.019	.016	.013	.0095	.0080	.0064
Oak	.023	.022	.020	.017	.013	.010	.0083	.0067
Hackberry	.019	.017	.016	.013	.011	.008	.0067	.0053
Birch	.022	.022	.019	.016	.012	.0093	.0078	.0062
Rock elm	.023	.021	.020	.016	.013	.0098	.0081	.0065
White ash	.019	.018	.016	.014	.011	.0082	.0069	.0055

WEIGHTS GIVEN IN POUNDS PER SQUARE INCH SURFACE MEASUREMENT FOR USUAL PACKING-BOX THICKNESS. SPECIES IN AIR-DRIED CONDITION, 12 TO 15 PER CENT MOISTURE CONTENT.

DETAILS OF CONSTRUCTION.

THICKNESS OF LUMBER.

Where woods in Groups I and II are ½-inch thick or less, woods in Groups III and IV can be 1/16-inch less in thickness; where woods in Groups I and II are more than ½-inch thick, and not more than 1-inch, woods in Groups III and IV can be ⅛-inch less in thickness.

WIDTHS OF LUMBER.

No piece less than 2½ inches face width should be used in any part except cleats. Any part of a box which is 6 inches or less in width should be made in one piece.

JOINING.

All parts which are of two pieces or more should be tongued and grooved, except ends, which may be butt-jointed and fastened with not less than three corrugated fasteners, two driven from one side and one from the opposite side, or cleated. Cleats should be not less than two inches wide and the same thickness as the sides, tops and bottoms.

NAILS.

The holding power of cement-coated, plain and barbed nails was obtained by testing a standard seven-penny nail driven to a depth of one inch in dry wood and is given below.

LOAD IN POUNDS PER NAIL.

Species of Wood.	Long-leaf Pine.	Basswood.	Beech.
Cement-coated nails	225	133	430
Plain nails	140	82	400
Barbed nails	110	70	335

The length of the nail rather than the gage of the wire is the principal factor in its holding power, and as nails split the wood it is desirable to use as small a gage as can be driven in nailing machines. Nails should be driven flush with the wood, and never be overdriven, as this often causes the heads to break the fiber of the wood under the heads, leaving no holding power in the wood. The evil effects of overdriving nails increases as the material of the board is made thinner. This may be obviated in a measure by greater care in driving the nails.

Six-penny nails and smaller should be spaced not more than two inches apart when driven in the side grain of the end and not more than 1¾ inches when driven in the end grain. The spacing of nails in end construction should be increased from the above, ¼ inch for each penny over six.

American Society for Testing Materials.

Reports of Committee D-11 on Rubber Products and Committee D-13 on Rubber Textiles.

AT THE ANNUAL MEETING of the American Society for Testing Materials held in Atlantic City, New Jersey, June 24-27, reports were made by Committee D-11 on rubber belting, hose for pneumatic tools, and insulating tape, and by Committee D-13 on the rate of gain in tensile strength due to moistened absorption in rubber textiles. The proposed revisions of the tentative specifications follow:

PROPOSED REVISION OF TENTATIVE SPECIFICATIONS FOR RUBBER BELTING FOR POWER TRANSMISSION (D 53-18 T.).[1]

The committee recommends that the following revisions be made in these specifications, and the specifications as revised continued as tentative:

1. Section 8.—Change the length of sample of belting submitted for inspection from 36 to 30 inches.

2. Add new Section 10 as follows:

10. The filler or weft strength of the cotton duck in the belting shall be determined as follows: A transverse strip 1½ inches wide shall be cut from the belting and opened up into its various plies. Each of these plies shall be ravelled down to a width of 1 inch and tested in a fabric-testing machine, the minimum width of jaws of which is 1½ inches, the distance between jaws, 3 inches, and the speed of separation of jaws, 20 inches per minute. The tensile strength shall be at least 175 pounds.

3. Change present Section 10 to Section 11, and change the length of specimens submitted for inspection from 36 to 30 inches.

4. Change present Section 11 to Section 12 and reword Paragraph (a) as follows:

(a) The friction test or adhesion between the plies shall be conducted in the following manner: Test specimens, each 1 inch in width, two plies in thickness and at least 4 inches in length, shall be prepared in sufficient number to test the adhesion between all plies. These should be taken transversely for belting 4 inches and over in width, and longitudinally for lesser widths. The two plies shall be separated for a distance of about 1½ inches and by means of these separated ends, the test specimen shall be mounted freely between the upper fixed pair of jaws and the lower pulling pair of jaws, the latter weighted to 18 pounds. The rate of separation under this test shall not be greater than 1 inch per minute.

Omit present paragraphs (b) and (c) and add new paragraph (b) as follows:

(b) A suitable friction-testing machine where available may be used to make the above test, in which case the pull required to cause a stripping of 1 inch per minute shall be not less than 18 pounds.

5. Change present Section 12 to Section 13, and reword Paragraph (e) as follows:

(e) The elongation at the breaking load shall be such that the original 2-inch gage length of the test specimen for the cover shall stretch to not less than 9 inches, and for the beading to not less than 10 inches.

LEADER HOSE FOR USE WITH PNEUMATIC TOOLS.

SERIAL DESIGNATION: D—19T. ISSUED, 1919.

1. (a) These specifications cover leader hose for air tools working at not more than 125 pounds pressure.

(b) The hose is of two classes:

(A) Braided leader hose has a reinforcement of three plies of braided cotton yarn between the inner tube and the outer rubber cover;

(B) Wrapped leader hose has a reinforcement of plies of cotton canvas between the inner rubber tube and the outer rubber cover.

I. MANUFACTURE.

2. The hose shall consist of: (a) an inner rubber tube; (b) cloth-braided layers or canvas plies; (c) an outer rubber cover; (d) a wire armor when specified.

3. The inner rubber tube shall be smooth, uniform in quality, and thickness and free from injurious defects.

4. (a) The reinforcement of braided leader hose shall consist of three plies of cotton braided layers evenly and firmly woven over the inner tube. Each layer shall be well impregnated with a rubber compound suitable for the required service.

(b) The reinforcement of wrapped leader hose shall consist of cotton canvas cut on a 45-degree bias and applied evenly and firmly over the inner tube. Each ply shall be well frictioned on both sides with rubber compound.

(c) The cotton shall be as free from unsightly defects, dirt, knots, lumps and irregularities of twist as is consistent with the best manufacturing practice.

(b) The reinforcement shall be sufficiently strong to enable the hose to successfully withstand the hydrostatic pressure test, yet at the same time be soft and pliable.

5. The rubber cover shall be uniform in quality and thickness, and free from injurious defects.

6. When specified, the hose shall be given an extra covering of armor of half-round galvanized steel wire 7/32 by 3/64-inch, wrapped with ¼-inch space between adjacent wires.

II. PHYSICAL PROPERTIES AND TESTS.

7. Where applicable, references are made below to the Standard Methods for Testing of Cotton Rubber-Lined Hose (Serial Designation; D 15b) of the American Society for Testing Materials.

8. The temperature of testing room and samples shall be as defined in Section 19 of Standard Methods D 15.

9. Prior to the hydrostatic test specified in Section 12 (b), a section of hose 16 inches long shall be cut at any place from each test length and subjected to the following tests:

10. The adhesive quality of the rubber impregnation binding the plies together shall be determined in the case of braided leader hose by suspending a 20-pound weight from the separated end of a ply having a 1-inch section, cut longitudinally from the 16-inch sample described in Section 9.

In the case of wrapped leader hose it shall be determined by suspending a 20-pound weight from the separated end of the duck of a 1-inch ring cut from the 16-inch sample described in Section 9, the force being applied radially.

In both cases the rate of separation of the plies shall not be greater than 1 inch per minute.

11. (a) The tests of tube and cover shall be conducted in accordance with Sections 18, 19, 20, 22, 23, 24 and 25 of the Standard Methods D 15.

(b) Test specimen shall be cut longitudinally of the hose.

(c) When stretched from 2 inches (the original gage length) to 9 inches, the stress in the specimen from the tube shall be at least 1,000 pounds per square inch, and in that from the cover at least 800 pounds per square inch.

(d) The set, or permanent elongation following a stretch from 2 inches to 9 inches, shall not exceed 25 per cent.

(e) The tensile strength shall be not less than 1,500 pounds per square inch for the tube, and 1,300 pounds per square inch for the cover.

(f) The elongation at the breaking load shall be such that the original 2-inch gage length of the test specimens for both the tube and cover shall stretch to not less than 11 inches.

12. (a) The method of conducting the hydrostatic pressure tests shall be in accordance with Section 26 of Standard Methods D 15.

(b) Each length of hose shall be subjected to a proof pressure test of 250 pounds per square inch for five minutes to expose imperfections. On armored hose this test shall be made after the removal of the armoring.

(c) From each lot of ten lengths or less of hose inspected, one length shall be further subjected to a pressure test of 800 pounds per square inch for 10 minutes, which it shall withstand without bursting. On large orders the number of tests may be reduced to not less than three at the option of the inspector representing the purchaser.

III. STANDARD DIMENSIONS AND WEIGHTS.

13. Unless otherwise specified, the hose shall be furnished in 10-foot lengths, which shall weigh not more than 4 pounds. The ends of each length shall be uncapped and without fittings.

14. (a) The minimum tube and cover thickness shall be as follows:

Internal Diameter of Hose, Inch.	Minimum Tube Thickness, Inch.	Minimum Cover Thickness, Inch.
7/16	3/32	1/16

(b) The gage of tube and cover shall be measured with the braid embedded in the rubber.

IV. MARKING.

15. Each length of hose shall have inlaid in rubber, midway between the ends, a brand showing the name of the manufacturer, the month and year of manufacture, the trade-name of the hose and the legend "Leader 125 lb. A.S.T.M. Specifications."

V. INSPECTION AND REJECTION.

16. (a) The manufacturer shall notify the purchaser sufficiently in advance of the completion of the hose to permit of arrangements for inspection.

(b) The manufacturer shall afford the inspector representing the purchaser, without charge, all reasonable facilities to satisfy him that the hose is being furnished in accordance with these specifications. The tests and inspections shall be made at the place of manufacture prior to shipment, unless otherwise specified, and shall be so conducted as not to interfere unnecessarily with the operation of the works.

(c) The purchaser may make the tests to govern the acceptance or rejection of the hose in his own laboratory or elsewhere. Such tests, however, shall be made at the expense of the purchaser.

17. Samples of rejected hose shall be preserved for two weeks from the date of the test report. In case of dissatisfaction with the results of the tests, the manufacturer may make claim for a rehearing within that time.

[1] "Proceedings," American Society for Testing Materials. Volume XVIII, Part 1, page 676 (1918).

TENTATIVE SPECIFICATIONS FOR ADHESIVE INSULATING TAPE.

SERIAL DESIGNATION: D—19 T.. ISSUED, 1919.

1. These specifications cover a friction tape composed of cotton sheeting impregnated with an adhesive insulating compound.

I. MANUFACTURE.

2. The cotton sheeting layer shall be made from a sheeting evenly and firmly woven from good cotton, and as free from unsightly defects, dirt, knots, lumps and irregularities of twist as is consistent with the best manufacturing practice. The threads shall run in straight lines without waving, so as to reduce to a minimum the raveling of the cloth when cut into tape.

3. The frictioning compound shall be an adhesive and insulating compound practically free from free sulphur (not over 0.05 per cent) or other substances which would have a deteriorating effect on copper or other metals or on the fabric.

4. The fabric shall be thoroughly impregnated and evenly covered on both sides with the frictioning compound.

5. The thickness of the tape shall be not less than 0.013 nor more than 0.017-inch, when measured with a rubber spring micrometer with 0.4-inch diameter foot.

6. The compound shall adhere firmly to the fabric and shall not pull away from the fabric so as to leave bare spots when adjacent thicknesses of the tape are separated.

II. PHYSICAL PROPERTIES AND TESTS.

7. When the tape is held before a strong light, the number of pin holes noted per linear yard of tape, ¾-inch wide, shall not exceed two.

8. The tensile strength per ¾-inch width shall be not less than 30 pounds. The initial distance between the jaws of the testing machine shall be 12 inches, and the rate of separation of the jaws shall be 20 inches per minute.

9. When wrapped on a clean, smooth copper rod and baked at 100 degree C. for 16 hours, the compound shall not discolor the copper.

10. (a) The adhesion of the friction coat of compound between the plies shall be such that when a strip of tape 2 feet long and ¾-inch wide is taken from a roll and wound upon a 1-inch mandrel under tension of 7½ pounds at the rate of 30 inches per minute, a weight of 3 pounds shall not cause the plies to separate at a greater rate than 30 inches per minute.

(b) After a strip has been exposed to dry heat at 100 degrees C. for 18 hours and then cooled to room temperature, a test specimen shall withstand the test prescribed in the Paragraph (a), except that the weight applied to unwind the tape shall be 1 pound instead of 3 pounds.

11. The test for dielectric strength shall be made as follows: the tape shall be spirally wound with one-third lap on a smooth metal rod, 1 inch in diameter, for a distance of 6 inches. Two inches in the center shall be covered with tin foil and bound down securely with tape, and an alternating potential of 1,000 volts, of a frequency of not over 65 cycles, shall be applied for five minutes between the metal rod and the tin foil without puncture.

12. One ½-pound roll for each 250 rolls shall be selected at random for the various tests. At least two feet of the outer layers shall be removed and one specimen taken for each test. If the tape fails in any one test, two additional specimens shall be taken. If the tape fails in either of these two additional tests, the material shall be rejected.

III. STANDARD WEIGHT, DIMENSIONS AND VARIATIONS.

13. The net weight of the tape, ¾-inch wide, shall be not less than 8 ounces per roll, exclusive of core, wrapping, and box.

14. The length of ¾-inch tape shall be not less than 55 yards per pound.

15. The width shall not vary from that specified more than ±0.03 inch.

IV. PACKING AND MARKING.

16. Each roll shall be wrapped in oiled paper or metal foil and enclosed in a suitable box. The wrapping shall be secure and shall thoroughly protect the contents.

17. Each box shall be marked with the name of the manufacturer or trade mark, and the nominal width and weight of the tape.

V. INSPECTION.

18. The tape shall be tested and inspected within four weeks of date of delivery.

VARIATION IN STRENGTH OF TEXTILES AT VARIOUS MOISTURE REGAINS, WITH RELATION TO THE WEIGHT OF THE FABRIC.[1]

From practical laboratory experiments it has long been known that the rate of gain in tensile strength due to moisture absorption in various textiles bears a very direct relation to the weight of the fabric. While very heavy fabrics and those woven closely are slow in reaching their full regain, the increase in strength is very great. On the other hand, light fabrics of a gauze-like nature obtain their regains quickly and show but little increase in strength from this source. It is therefore manifestly incorrect to assume a standard rate of increase for all weights of textiles. In order to investigate this subject the chairman tested a variety of fabrics, ranging from a very open cheese-cloth weighing about 1½ ounce per square yard up to the heaviest obtainable duck, having a weight of about 50 ounces per square yard.

The fabrics were tested in groups of eight or ten specimens each at various regains, passing from a bone-dry condition at one end of the scale to that at which all the moisture possible had been absorbed from an atmosphere having a relative humidity of 80 per cent. The moisture content was determined in each case by weighing on analytical balances before and after drying in an electric oven at a temperature of 220 degrees F.

[1]From Report of Committee D-13 on Textile Materials.

The results are plotted in Figure 1, and show to the same scale the wide range in strength increase with the various weights of fabric. In all cases strip specimens were used measured to 1½ inches wide and ravelled accurately to 1 inch. The distance between jaws was 3 inches in all cases and the speed of the moving jaw 12 inches per minute. While weighing, the moist specimens were in all cases enclosed in air-tight containers, so that the moisture could not vary. The following is the detail of the tests:

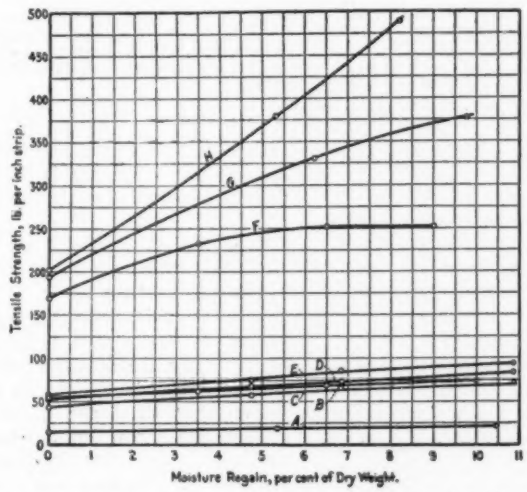


FIG. 1. VARIATION IN TENSILE STRENGTH IN TEXTILES DUE TO MOISTURE.

FABRIC A.—An open cheese-cloth of ordinary grade cotton 40 warp and 32 filling threads per inch, weighing bone dry 1.45 ounces per square yard or, at a regain of 6 per cent, 1.54 ounces.

Moisture, per cent	0	5.37	10.49	
Average tensile strength, pounds	17.0	19.8	21.8	

FABRIC B.—20-inch 7-ounce Osnaburg. A very good standard fabric of this class. 40 warp by 30 filling threads per inch. The bone-dry weight was 7.64 ounces per sq. yard and, at 6 per cent regain, 8.10 ounces.

Moisture, per cent	0	4.76	6.87	10.88
Average tensile strength, pounds	43.6	57.8	67.4	71.9

FABRIC C.—Mercerized cotton airplane wing fabric. Normal weight 4 ounces per square yard; 3/80[3] yarn, with 68 threads per inch of width in both warp and filling.

The plot for this filling is taken from a paper, "The Effect of Moisture upon the Strength of Aircraft Fabrics," presented by the chairman at the June, 1918, meeting of the Society.[2]

FABRIC D.—Cotton bag sheeting 48 by 48, 2.85-yard goods 36 inches wide. This cloth weighed bone dry 5.17 ounces per square yard and, at 6 per cent regain, 5.48 ounces per square yard.

Moisture, per cent	0	4.76	6.87	10.88
Average tensile strength, pounds	54.3	69.3	73.0	83.3

FABRIC E.—30-inch 7-ounce Osnaburg. Exceptionally clean. The bone-dry weight was 8.12 ounces per square yard and, at 6 per cent regain, 8.60 ounces.

Moisture, per cent	0	4.76	6.87	10.88
Average tensile strength, pounds	56.1	75.1	85.3	93.1

FABRIC F.—Standard 11/23[3] by 11/23[3] square woven tire fabric, made of carded Egyptian cotton, 17¼ ounces per square yard, under normal conditions.

The plot for this fabric was originally derived by Messrs. Yeaton and Panettiere in the Textile Laboratory at the Massachusetts Institute of Technology. The plat was also presented by the author of the paper to which reference has just been made.

FABRIC G.—A moderately heavy duck used in the manufacture of stitched canvas belts. The warp threads are 6 ply 26 per inch and the filling 5 ply 16 per inch. Bone-dry the canvas weighed 27.5 oz. per sq. yd and, at 6 per cent regain, 29.1 ounce.

Moisture, per cent	0	6.23	9.79
Average tensile strength, pound	194	329	375

TABLE I—STRENGTH INCREASE IN VARIOUS FABRICS FOR VARIOUS MOISTURE REGAINS.

Fabric.	Maximum Regain, Per Cent.	Rate of Increase in Per Cent of Dry Strength for Each Per Cent of Moisture.	Weight at 6 Per Cent Regain, Oz. Per Sq. Yd.
A—Cheese-cloth	10.40	2.69	1.54
B—Osnaburg	10.88	5.98	8.10
C—Wing fabric	10.33	3.52	4.09
D—Sheeting	10.88	4.91	5.48
E—Osnaburg	10.88	6.06	8.60
F—Tire fabric	9.00	6.67	17.3
G—Belt duck	9.70	9.53	29.1
H—Heavy duck	8.22	17.12	49.34

[2]"Proceedings, American Society for Testing Materials," Volume XVIII, Part I, page 380 (1918).

TABLE II.—"CORRECTED" RATES OF STRENGTH INCREASE.

Fabric	Weight at 6 Per Cent Regain, Oz. Per Sq. Yd.	Correction Rate.
A—Cheese-cloth	1.54	0.57
B—Osnaburg	8.10	3.00
C—Wing fabric	4.00	1.48
D—Sheeting	5.48	2.03
E—Osnaburg	8.60	3.18
F—Tire fabric	17.3	6.40
G—Belt duck	29.1	10.77
H—Heavy duck	49.34	18.26

FABRIC H.—A very heavy closely woven canvas. There were 19 threads per inch in the warp, 13 ply. The filling was made up of 15 threads per inch, 14 ply. Bone dry the canvas weighed 46.55 ounces per square yard and, at 6 per cent regain, 49.34 ounces.

Moisture, per cent	0	5.28	8.22
Average tensile strength, pounds	204	381	491

The straight line plots in Figure 1 show that the strength increase in every case is fairly uniform and at the rates indicated in Table I.

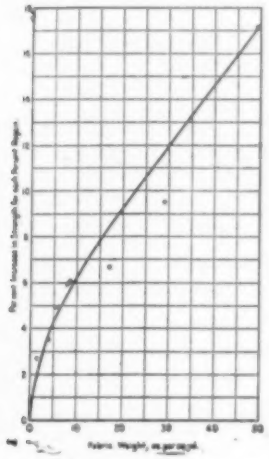


FIG. 2—RATE OF INCREASE IN TENSILE STRENGTH WITH RELATION TO WEIGHT OF FABRIC.

The plot of Figure 2 shows the rate of increase in relation to the weight of the fabric. Any expression or formula, therefore, to be used to correct apparent strengths for the moisture present must embody the weight of the fabric. The rate of increase in strength runs by approximately a straight line from 2.69 per cent for 1.54-ounce fabrics to 17.12 per cent for 49.34-ounce duck. The rate of this increase is very nearly 0.37 per cent per ounce of fabric weight.

Therefore, there is for every weight of fabric a "correction rate" equal to 0.37 multiplied by its ordinary weight in ounces per square yard. For the fabrics given above this will be as shown in Table II.

Thus to correct any cotton fabric for moisture present and

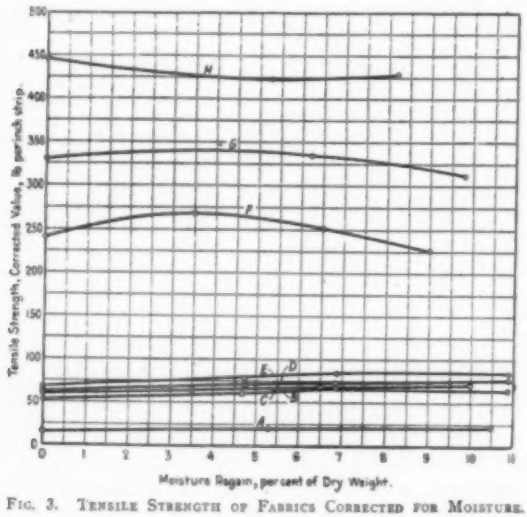


FIG. 3. TENSILE STRENGTH OF FABRICS CORRECTED FOR MOISTURE.

bring it to a condition of 6½ per cent standard regain, would require the use of a formula such as:

Tensile Strength Corrected to Standard Moisture Regain of 6½ per cent = Tensile Strength from Machine Reading × [100 + (Rate × 6.5)]

100 + (Rate × Actual Regain at Test)

If the above formula be applied to all the preceding tests the plot of Figure 3 will be the result. This indicates a fair degree of uniformity in the results whatever the moisture content may be.

STEAM HOSE FOR CAR HEATING.

AT THE RECENT MEETING of the American Society for Testing Materials at Atlantic City, a paper on steam hose for car heating was presented by H. J. Force. The author describes briefly a method of manufacture for steam hose which will neither contract nor expand in service. He said:

> When made from duck alone, steam hose has been found to contract to such an extent in service that in some cases it becomes uncoupled when passing around a short curve.
>
> Again, the failure of steam hose in many cases has been traced directly to the excessive expansion which takes place after the hose has been in service for some time. This expansion frequently results in the hose blowing off from the coupling, requiring the use of a special clamp to hold the hose on the coupling.
>
> After making a series of tests, it was decided to build a hose of duck with a heavy friction, and then one or more layers of braiding. If made from duck alone, hose will expand excessively. It is impracticable to make it from braiding alone, but with a combination of duck and braiding a very satisfactory grade of steam hose can be produced which will show no contraction in length and no expansion in diameter under the most severe service conditions.

Four constructions of hose were tested, each, however, with two plies of braiding over the duck plies with intervening rubber layers for anchoring the braiding. All hose was steamed to bursting, ten hours a day at 60 pounds pressure. Under this test one series of hose showed an average life in eight samples of 960 hours, the minimum being 700 and maximum 1,535 hours. In this series the number of plies of duck was increased from two to three, and this apparently had the effect of nearly doubling the life of the hose.

The detailed construction was as follows: Tube, regular specification steam hose 5/32-inch thick: 3 ply, 23 ounces per square yard with heavy coat of special steam-resisting friction; first ply of gum to anchor braiding, 1/16-inch thick, regular specification, steam-resisting; first ply of braiding, number 8/3 yarn in 5 by 5 strands; second ply of gum to anchor braiding, 1/32-inch thick, regular specification, steam-resisting; second ply of braiding same as the first ply; outside cover, 1/32-inch thick, regular specification, steam-resisting.

The author concludes:

> 1. That steam hose should be made of a composition of duck and braid.
> 2. That machine-made tubes should not be used, and that tubing of three-ply calender should in every case be used in hose to be subjected to any considerable temperature.

J. P. DEVINE CO. PLANT ADDITIONS.

Increased business during the past four years has compelled the J. P. Devine Co., manufacturer of vacuum-drying and evaporating apparatus and chemical apparatus, to build several additions to its great plant at Buffalo, New York. One of these, constructed of steel and brick with the most improved light and ventilating system, 30 by 100 feet, and just completed, houses the vacuum-pump assembly department; another, 90 by 100 feet, of the same material and general plan, in course of construction, enlarges the general assembling department. The foundations have been laid and the steel construction is proceeding for a third addition, a new foundry, 90 by 225 feet, equipped throughout with new machinery, giving greatly increased facilities for casting large commercial units. The total investment represented in these plant additions when fully equipped will amount to $200,000.

What the Rubber Chemists Are Doing.

QUANTITATIVE TESTING OF RAIN-PROOF AND WATERPROOF CLOTH.[1]

THE AUTHORS, Geoffrey Martin and James Wood, preface their paper by noting that the tests given are all well known in the trade, but as not much appears to have been published on the subject the methods described may be of interest to chemists who are called upon to examine cloth in regard to its waterproof quality.

Among the chief waterproofing processes may be mentioned the following:

1. With aluminum acetate. The fabric is immersed in a solution of aluminum acetate, squeezed and dried, aluminum oxide being deposited in the fiber. Fabrics thus waterproofed are porous and permeable to air. They are not strictly waterproof, and consequently are sometimes described as showerproof or rainproof.

2. With gelatine, glue, isinglass, casein, etc., followed by treatment with a solution of alum, tannin, etc. Here again the goods are usually not absolutely impermeable to water.

3. With parafine and other waxes. Articles treated in this way are usually impermeable to water.

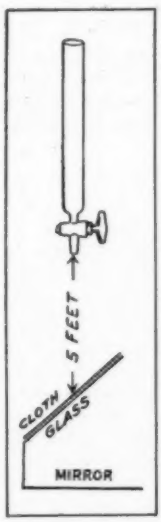
4. With india rubber.

5. With oil. A mixture of raw and boiled linseed oil mixed with coloring matter, resin and other materials is spread in thin layers on the fabric, which is dried between successive applications. Oiled silks, oil-skins, etc., impervious to water and air, are thus prepared.

6. With ammoniacal cupric oxide. The "Wellesden" fabrics are waterproofed by this process.

DETERMINATION OF WATERPROOF VALUE.

THE DROP TEST. This is the War Office test and is especially valuable in that it furnishes a fairly accurate numerical value of the degree of waterproofing. It reproduces more or less exactly the actual conditions to which a cloth is subjected in practice, imitating the natural fall of rain.



DROP TEST FOR WATERPROOF FABRICS.

The method of carrying out the test is shown in the illustration. The sheet of cloth to be tested is laid upon a sheet of white blotting paper which in turn rests upon a sheet of plate glass, supported by a frame at an angle of 45 degrees. The cloth and blotting paper are fixed in position by strips of lead about an inch wide, bent at the end and laid over the cloth. Beneath the plate glass is a horizontal mirror.

Water is dropped from the burette onto the cloth about five feet below. By means of the cock the flow of the water is kept at 20 drops per minute. This is continued until the water passes through the waterproofed cloth and stains the blotting paper below. By viewing the mirror from behind, the exact moment at which the stain appears can be determined and the number of drops required to produce this result is noted.

There is a considerable variation between the minimum and maximum number of drops required for penetration, but the average for a set of tests (20 trials per one half square foot) seems characteristic for any given piece of cloth. To pass the War Office test, an average of 60 drops is required. This is considerably in excess of that usually needed in civilian garments.

The drop test is repeated on samples of the same cloth after each of the following treatments:

1. The cloth should be rinsed three or four times in cold water, dried, and tested again. A more severe test is to soak the cloth in cold water for 24 hours, dry, and then again test. A properly waterproofed cloth should not show much variation when treated in this manner.

2. The cloth should be covered with a damp cloth, ironed, and again be subjected to the drop test. It is still better to blow steam through it. The object of this test is to be sure that the waterproofing is of such nature as to resist the treatment to which the cloth will be subjecteed in the tailor's hands.

FABRICS PROOFED WITH RUBBER.

In the case of fabrics proofed with india rubber, the War Office specifies the composition of the proofing material. Thus, the material for proofing coats with vulcanized india rubber mixings must contain: mineral matter, not more than 41 per cent; sulphur not more than three per cent; india rubber not less than 56 per cent on the average, and no single coat may contain less than 54 per cent.

In the case of cyclists' waterproof capes, a different composition may be used for the proofing. The mineral matter must not exceed 52 per cent, sulphur three per cent (the free sulphur in this to be not more than one per cent). The rubber must not be less than 45 per cent on the average, and no single garment may contain less than 43 per cent. Civilian garments may consist of different qualities from these, which represent a very high class of waterproofing.

ANALYSIS OF RUBBER PROOFING.

MINERAL MATTER. A part of the sample is ignited and the weight of ash determined. Due corrections are made for oxidation to sulphates. When antimony sulphide and copper are present these should be estimated in the usual way. The mineral matter used for coloring the proofing of cylists' capes usually consists of zinc oxide and litharge. Small additions of other ingredients such as are generally recognized as having a beneficial influence are officially recognized. The presence of calcium carbonate and magnesium carbonate is often prohibited in War Office contracts.

Sulphur is estimated in the usual way as barium sulphate, oxidation being generally effected by nitric acid and potassium chlorate. From a determination of the amount of antimony and other metals present as sulphide in the preliminary operation, a correction for the amount of sulphur combined with antimony and other metals can be made.

Free sulphur is regarded as the sulphur extracted by boiling acetone. The substance is extracted by boiling acetone for about one hour, the acetone evaporated, the residue oxidized, and the amount of free sulphur determined as barium sulphate.

Organic matter extracted by acetone is the difference between total acetone extract and free sulphur.

ALCOHOLIC POTASH EXTRACT. The amount of organic matter dissolved by boiling the acetone-extracted sample with alcoholic potash is estimated as follows:

The acetone-extracted rubber is dried and boiled for eight hours with a solution of alcoholic potash (56 grains caustic potash in 500 cc. of alcohol). The solution is poured into a dish, the rubber washed twice with alcohol and boiled two or three times with water, the washings added, and the alcohol distilled off and recovered. The residue is evaporated, washed into a separating funnel, acidified with hydrochloric acid, and the fatty acids extracted with successive portions of ether. The ether is

[1] "Journal of the Society of Chemical Industry," April 15, 1918, page 84T.

distilled off and the residue dried to constant weight in the water oven.

The rubber residue left after boiling with alcoholic potash is washed free from potash by water, dried to constant weight in the water oven, and cooled in *vacuo*. The ash and sulphur in the dried residue are then estimated and thence the weight of organic matter in the residue is calculated. This weight is deducted from the weight of organic matter in the residue after extraction with acetone (obtained by deduction of ash and combined sulphur) and from the difference the loss of organic matter by extraction with alcoholic potash per 100 parts of rubber is calculated.

The india-rubber proofing should be free from grit and large size particles. In the case of capes a three-inch square of material should have at least 0.13 grams of proofing between the two fabrics.

THIOGEN PROCESS OF MAKING SULPHUR.

The thiogen process of making sulphur consists essentially in the treatment of sulphur dioxide gas, from any source, with a hydrocarbon gas in the presence of a basic sulphide catalytic material. Any form of hydrocarbon gas or reducing gas may be used, the result in any case being sulphur vapor, carbon dioxide and water vapor. The so-called wet thiogen process was tried out under the direct supervision of the United States Bureau of Mines in 1915, and the results published in Bulletin 113 of that Bureau,

In brief, it was determined that sulphur could undoubtedly be produced by this process at an estimated cost of about $12 per ton. By adaptation of modern commercial practice in the concentration of the sulphur-dioxide gas from weaker gases, before reducing this gas to elemental sulphur, by the action of the reducing gases not only is the size of the installation for a given capacity very much reduced but the oxygen content of the gas is entirely removed, thereby effecting a great reduction in the amount of reducing material necessary.

Under the most favorable conditions the cost of producing sulphur by the improved process is now estimated at $5 per ton.

DETERMINATION OF SULPHUR IN VULCANIZED RUBBER.

The following method for determining sulphur in vulcanized rubber, by H. P. Stevens, is abstracted from "The Analyst," volume 43 (1918), page 377.

About 0.5 grams of the sample is digested with 20 cc. of nitric acid (specific gravity 1.42) and 0.5 grams of potassium chlorate. The liquid is then boiled for two or three hours beneath a reflux condenser, subsequently evaporated to dryness in a dish after the addition of three grams of pure magnesium nitrate. The residue is cautionsly heated over a flame, the presence of the magnesium salt moderating the combustion, and any unburnt carbon is destroyed by digestion with nitric acid and potassium chlorate, and the excess of acid evaporated.

After the addition of 10 cc. of strong hydrochloric acid, the dish is covered with a watch glass and gently heated until red fumes cease to appear. The liquid is then diluted, filtered, made up to 300 cc., and heated to boiling on a hot plate. The sulphuric acid is precipitated by the addition of 5 cc. of ten per cent barium chloride solution, and the precipitate allowed to stand over night before filtration.

BRITISH USE OF NITER CAKE IN RUBBER RECLAMATION.

The following information on the use of niter cake in reclaiming unvulcanized rubber is derived from a report by Consul Ross E. Holaday, Manchester, England, in "Commerce Reports" (March 15, 1919).

In reclaiming unvulcanized waste rubber by the acid process a solution is made up by dissolving niter cake in hot water, which gives about a ten per cent content of sulphuric acid. As it is necessary to have a 15 to 20 per cent solution of sulphuric acid, Manchester reclaimers bring this up to strength by using commercial sulphuric acid. In this way they are enabled to use about 50 per cent niter cake in the treatment of waste rubber by the acid process.

During the war sulphuric acid was available for use in England only on a permit issued by the Ministry of Munitions and it was not possible to use a straight sulphuric acid solution without the use of niter cake. By careful handling and thorough washing it has been found that niter cake can be used with a considerable degree of safety.

WATERPROOFING DRAWINGS.

For the purpose of rendering drawings waterproof to be used in damp localities, mines, etc., J. S. Carpenter recommends in "Engineering News," September 20, 1918, a solution of pure unvulcanized caoutchouc in benzene. The solution is diluted sufficiently with benzene to yield a thin liquid that will spread well under a brush. With this liquid the drawing is coated on both sides. A thicker solution or cement of crude rubber is used to stick together parts of large drawings. The same solution may also be used for cleaning soiled drawings, the deposited film of rubber being rolled up and used as an eraser.

SYNTHETIC CAOUTCHOUC.

The "Journal of the Society of Chemical Industry," March 31, 1919, gives the following abstract of an article by C. Duisberg, in the "Elektrochemische Zeitschrift" ("Electrochemical Journal"), 1918, volume 24, pages 369-372.

Synthetic rubber from dimethylbutadiene (methylisoprene) as first made on a commercial scale was very susceptible to oxidation and combined very slowly with sulphur. These difficulties were overcome by the addition of organic bases (especially piperidine and similar substances, and in this way hard rubber equal in strength to that made from natural rubber and with an electrical resistance about 20 per cent higher, has been made.

The production of soft vulcanized rubber from the synthetic product has not been equally successful. Leather-like products are usually obtained and although the elasticity can be improved by addition of dimethylaniline and other substances, the material does not work well on the rolls, does not vulcanize satisfactorily, and is inferior in "nerve" to vulcanized rubber made from the natural product.

CHEMICAL PATENTS.

THE UNITED STATES.

LEATHER SUBSTITUTES. A permanently fibrous substitute for leather, comprising a short length fiber, selected sheet Ceylon rubber, gum Concho, shoddy, Pontianak, magnesia, red oxide of iron, and sulphur, the whole being vulcanized. (John D. Prince, Boston, Massachusetts. United States patent No. 1,305,621.)

PHENOLIC CONDENSATION PRODUCT AND PROCESS. A fusible product of para-cresol and a substance containing a mobile methylene group. The product fuses at temperature above 115 degrees C. (Leo H. Bakeland, Yonkers, New York, assignor to General Bakelite Co., New York City. United States patent No. 1,306,681.)

PROCESS FOR TREATING LATEX AND PRODUCT. The process comprises rendering the nitrogenous matter contained in a mass of latex insoluble, subjecting the mass to vacuum evaporation and adding a vulcanizing agent. (Edward Mark Slocum, Medan, Sumatra, Dutch East Indies, assignor to General Rubber Co., New York City. United States patent No. 1,306,838.)

METHOD OF WATERPROOFING FABRICS. Textile fabrics and wearing apparel are treated with paraffine wax in conjunction with petrolatum and a selenium-treated Chinese wood oil. (Herbert P. Pearson, assignor to Pearson Products Corporation, both of New York City. United States patent No. 1,307,373.)

THE DOMINION OF CANADA.

LEATHER SUBSTITUTE AND PROCESS. This consists in forming a matted fiber sheet, saturating and combining with it a binding agent composed of rubber, balata, fish glue, silicate of soda, sulphur and linseed oil, drying the sheet and compressing it. (Roland B. Respess, New York City. Canadian patent No. 191,418.)

RUBBER SUBSTITUTE AND PROCESS. Glutinized vegetable proteid substances are treated with a phenol, an oxidizing oil, an active methylene compound and an alkali, and the mass finally vulcanized. (Sadakichi Satow, Tokio, Japan. Canadian patent No. 191,428.)

THE UNITED KINGDOM.

RECLAIMING RUBBER. Rubber waste is finely ground and mixed with a rubber solution in the proportion of 2½ to 3 pounds of new rubber to each hundred of old, the solvent being gasoline or carbon tetrachloride. The mass is reground, after which the solvent and any contained moisture are removed as far as possible, the temperature being kept below the vulcanizing point, employing a partial vacuum if necessary. Molding and vulcanization are effected with or without the addition of sulphur which, when employed, is preferably dissolved in the rubber solvent. (J. Porzel, 199 Glenwood avenue, Buffalo, New York. British patent No. 124,887.)

COMPOSITION FOR COATING FABRICS. This consists of rubber and aluminum hydrates, with or without other ingredients, forming a non-inflammable coating. Example of proportions: 25 parts rubber, 60 parts aluminum hydrate, 7 parts asbestos, 1½ to 6 parts litharge and 1 part sulphur. This mixture is softened in coal-tar naphtha and used to coat fabric which may be first treated to render it fireproof, and the coating may be vulcanized in a steam vulcanizer. (W. H. Perkin, Waynflete; J. H. Mandleberg and J. Mandleberg & Co., Pendleton, Manchester. British patent No. 125,622.)

VULCANIZING ACCELERATOR. Caustic alkali is dissolved in an organic compound (other than glycerol or glycol) of predominant hydroxylic character, such as butyl or amyl alcohol or phenol. The compounds in question are limited to those that are fluid at the ordinary temperatures or are fusible at about 120 degrees C. (Dunlop Rubber Co., 14 Regent street, Westminster, and D. F. Twiss, Royal road, Sutton, Coldfield. British patent No. 125,696.)

THE REPUBLIC OF FRANCE.

ACCELERATORS. New agents for accelerating the vulcanization of caoutchouc and method of their production. (S. J. Peachey, Heaton, Mersey, near Manchester, England. French patent No. 490,897.)

HOLLAND.

ACCELERATING VULCANIZATION OF RUBBER. Para-nitrosodimethylaniline is added as the accelerating agent. (S. J. Peachey, Heaton, Mersey, near Manchester, England. Holland patent No. 2,829, March 15, 1919.)

OTHER CHEMICAL PATENTS.

THE UNITED KINGDOM.

APPENDIX TO ABRIDGMENTS OF SPECIFICATIONS (1915).

NO. 5,915. The incorporation of coloring matter in solution with the rubber of balloon fabrics to guard against deleterious action by actinic rays of light. (Not yet accepted.) R. Wheatley and North British Rubber Co., Castle Mills, Fountainbridge, Edinburgh.

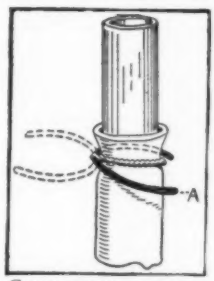
13,689. The coloring of one or more of the intermediate plies as well as the outer one of the gas-tight membrane of a balloon fabric to guard against the deleterious action of light. (Not yet accepted.) W. A. Williams and North British Rubber Co., Castle Mills, Fountainbridge, Edinburgh.

13,690. A compound fabric for balloons of the type described in Specification 7130/03, consisting of two or more plies of similarly dyed material of identical weave and yarns. (Not yet accepted.) W. A. Williams and North British Rubber Co., Castle Mills, Fountainbridge, Edinburgh.

LABORATORY APPARATUS.

INSURING TIGHT CONNECTIONS BETWEEN GLASS AND RUBBER TUBING.

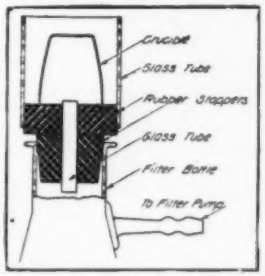
A SIMPLE AND EFFECTIVE DEVICE for insuring tight connections between glass and rubber tubing is described by C. C. Keplinger in "The Journal of Industrial and Engineering Chemistry," August, 1918, page 631.



CONNECTION BETWEEN GLASS AND RUBBER TUBING.

The device illustrated permits the use of oversize rubber tubing, and insures gas- and water-tight joints. It has been used throughout the year with Liebig condensers and gas apparatus and given complete satisfaction. *A* is a piece of stout wire bent in *U* form of such size that the limbs of the *U* will just slip over both tubes. A loop of stout cord is tied about the connection, the wire *U* is slipped through this loop as shown by dotted lines, the cord is twisted, using the wire as a lever, and as soon as the joint is tight, the *U* is turned as shown at *A*.

Cord is better than copper wire for this purpose because it distributes the force more uniformly throughout its length. This mode of attachment may be dismantled without pliers or other tools.



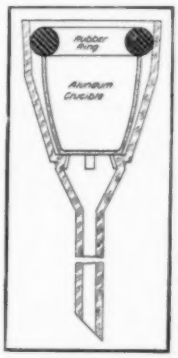
FILTER CRUCIBLE CLEANSING.

CLEANSING FILTER CRUCIBLES.

An effective method of cleansing alundum filtering crucibles by reverse washing is clearly shown in the accompanying illustration for which we are indebted to the Norton Company, Worcester, Massachusetts.

FILTERING CRUCIBLE.

Alundum filtering devices are especially adapted to routine laboratory work where suction is available because of the rapidity with which filtration can be made. They will hold the finest precipitated substance and are particularly adapted to organic work where they need only to be heated over a burner to be cleansed. In addition to the usual forms of crucibles, cones, and dishes, alundum filters are made in special shapes, such as disks, plates, tubes, etc.



FILTERING DEVICE.

A novel and effective way of supporting a filtering crucible so that the entire filtering area is acted upon by the suction is shown in the illustration. The apparatus was designed and used first by G. L. Spencer of the Cuban-American Sugar Co. (Norton Co., Worcester, Massachusetts.)

COMPOUND FOR FROSTING AND ETCHING GLASS.

Diffusalene is the name given to a new liquid compound which imparts a smooth satin-like frosted finish to glass surfaces. The glass becomes uniformly and permanently etched wherever the liquid is applied, complete chemical action taking place in about three minutes. It is applied by dipping or by brush and is practically harmless to hands or clothing. (Standard Scientific Co., 70 Fifth avenue, New York City.)

"CRUDE RUBBER AND COMPOUNDING INGREDIENTS" AND "RUBBER MACHINERY," by Henry C. Pearson, should be in the library of every progressive rubber man.

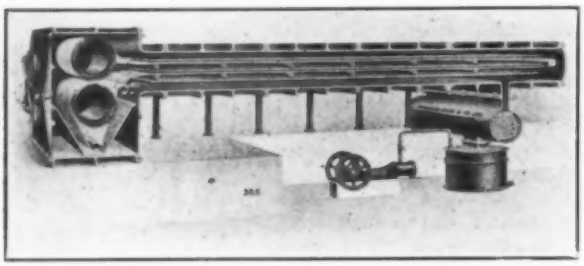
New Machines and Appliances.

VACUUM-DRYING, IMPREGNATING, AND SOLVENT RECOVERY APPARATUS.

THIS APPARATUS has been specially designed for impregnating tire fabrics, belting and hose duck, and other fabrics; drying after impregnating, and recovery of the volatile solvent employed.

The complete operation takes place under vacuum. The material is first dried by passing it from the top roller to the bottom roller between the heating tables. The solvent is then admitted to the chamber and thoroughly impregnates the material owing to the air having been entirely expelled. The material is then rewound on to the top roller, passing between rollers to squeeze out surplus solvent, and afterwards between the heating tables to thoroughly dry it.

The vapor from the drying chamber is drawn through a



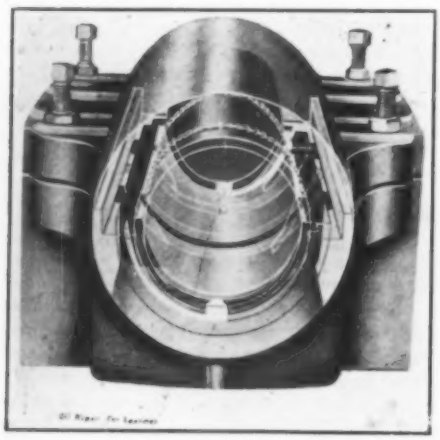
MACHINE FOR VACUUM-DRYING AND SOLVENT RECOVERY.

multitubular condenser by means of a vacuum pump, and the condensed solvent is collected in the receiver.

Details of construction vary according to the materials to be treated, and the solvent used. (Francis Shaw & Co., Limited, Bradford, Manchester, England.)

OIL-WIPER FOR SELF-OILING BEARINGS.

The use of an efficient oil-wiper on bearings, particularly heavy ones, results in a saving of oil, labor and machinery repairs. Such devices are well adapted to rubber mill practice.



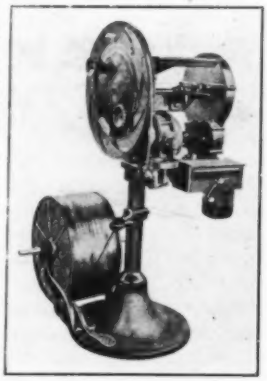
OIL-WIPER FOR BEARINGS.

The wiper of novel construction here shown consists of a tempered steel spring with a triangular-shaped piece of Babbitt metal mounted on the end. This piece of Babbitt metal is shaped to the shaft and wipes the shaft clean and returns the oil to the reservoir of the bearing. The spring is fastened to a convenient point in the groove at the end of the bearing or to the housing at the end of the bearing. There is a wiper placed at each end of the bearing.

These wipers are equally useful for all self-oiling bearings, whether plain, roller or ball. It is said that on a test run of four months on ten bearings, each transmitting 250 horsepower, one gallon of oil was required for replacement on all ten bearings. (Industrial Products Co., 1024 Penobscot Building, Detroit, Michigan.)

BEAD-MAKING MACHINE.

The growing popularity of straight-side tires has stimulated the invention of labor-saving machinery to meet the tire manufacturers' requirements. The inextensible beads used on all straight-side tires are built up on an annular wire core, and the machine shown in the accompanying illustration is especially designed for the purpose of making this bead-core.

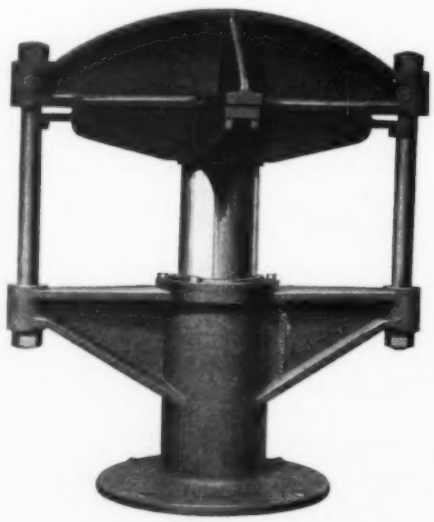


WIRE-BEAD MACHINE.

The wire is fed from a stock-reel to an expansion-head, whereby any size of bead from 31 by 4 inches to 38 by 5½ inches may be formed. The machine is equipped with a direct motor-drive and starting switch. (Gillette Rubber Co., Eau Claire, Wisconsin.)

THE W-S-M HYDRAULIC RIMMING-PRESS.

ACCORDING to the old method used in the manufacture of cord tires, the air-bag rings were drawn together by hand-operated bolts that held them together—a very tedious process.



PRESS FOR SETTING AIR-BAG RINGS.

The demand for a small but simple press for doing this work has resulted in the machine here illustrated. By using this press the rings are quickly brought together ready to receive the bolts, no mechanical knowledge being necessary.

The cylinder, ram, and platens are of heavy semi-steel and the cylinder and base are cast in one piece. The cylinder is outside packed with a U-leather ring-packing having a flax core and held in place by a gland which can be easily removed.

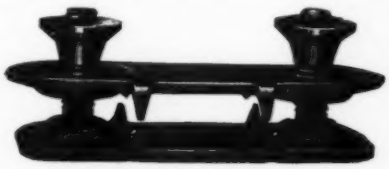
The ram cap or lower platen and the upper platen are spider-shaped to enable the operator to tighten up the bolts on the rings easily after they have been forced together. The upper

platen is supported on heavy steel rods and acts as the upper frame of the press.

The distance in the clear between platens when the lower one is down is 14 inches, while between the rods it is 45¼ inches. (The Wellman-Seaver-Morgan Co., Cleveland, Ohio.)

HIGH-DUTY BELT-FASTENERS.

The requirements of conveyor service, elevator belts and heavy transmission duty at moderate speeds have been considered in the design of this belt fastener. It gives an evently balanced joint of exceptional tensile strength, combined with smoothness on both sides.



FASTENER FOR HEAVY BELTS.

The squared ends of the belt are butted tightly together and the required number of top plates, with the round holes, are spaced evenly across the belt with approximately one-half inch between each plate, and the bolt holes marked and punched one-sixteenth inch back from the corresponding marked positions on the belt.

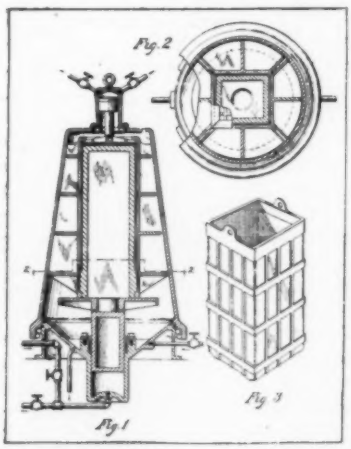
The square-seated plates are placed on the pulley side and the square-head bolts inserted in the holes, the round countersunk plate being used on the reverse side to receive the special cone-shaped nuts.

After the parts are properly assembled the nuts are screwed down tightly and evenly with a special socket wrench. After a few days the nuts should again be tightened. The bolt ends on conveyor belts should be cut off and the ends smoothed down. (Flexible Steel Lacing Co., 522 South Clinton street, Chicago, Illinois.)

MACHINERY PATENTS.

BATTERY-JAR PRESS-VULCANIZERS.

THIS MACHINE exerts pressure simultaneously and in all directions upon the several faces of the battery-jar being molded, which is afterwards cured in the same machine. Referring to the illustrations, Fig. 1 is a vertical sectional view. Fig. 2 is a horizontal section on the line 2—2 of Fig. 1. Fig. 3 is one of the battery jars produced on this ma.-chine.



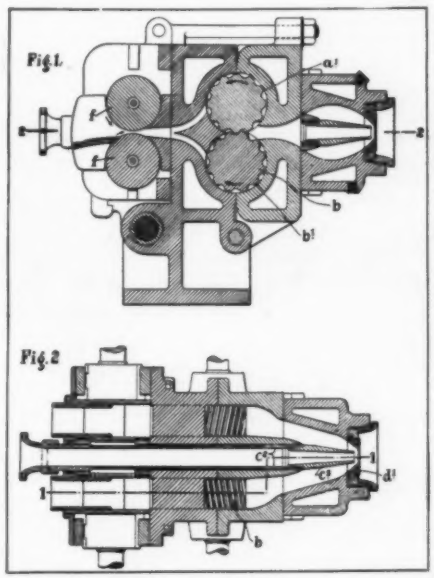
BATTERY-JAR MOLDING AND VULCANIZING PRESS.

The operation is as follows: the cover is hoisted up and the cylinder discharged so that the ram and platen are in their lowest position. The mandrel is placed upon the platen and the sheets of unvulcanized compound are assembled upon the four sides and top of the mandrel together with the four side plates and the top plate of the outer mold. The bell-shaped cover is then lowered and locked to the base. The waste pipe of the cylinder is left open so that the piston may be pushed up by the rising mold.

Pressure is then turned into the cylinder and the platen with the mold thereon is elevated, the result being that a heavy molding pressure is exerted, causing the edges, sides and bottom walls of the battery-jar to be fully compacted and molded. Steam is then turned into the interior of the vulcanizing chamber and, circulating around the mold, vulcanizes the jar. (John R. Gammeter, Akron, Ohio, assignor to The B. F. Goodrich Co., New York City, United States patent No. 1,306,001.)

A TUBING MACHINE OF NEW DESIGN.

A tubing machine of novel design is shown here, Figure 1 being a sectional elevation on the line 1-1 of Figure 2 and Figure 2 is a sectional plan on the line 2-2 of Figure 1. The method of operation is as follows:



A BRITISH TUBER.

The extrusion rollers *b* and the feed rollers *f* are revolved in the directions indicated by the arrows in Figure 1. The rubber which it is desired to extrude is first formed into strips of a suitable width and thickness to introduce between the feed rollers *f*.

By means of the adjusting screw the feed rollers are adjusted so as to pass forward a sufficient quantity of material to fill entirely the spaces between the teeth b^1 of the rollers *b*.

As the extrusion rollers revolve the material is carried around the periphery of the rollers until it reaches the point at which the teeth b^1 interlock.

The teeth are so shaped that the material is then forced out of the spaces in a thoroughly masticated condition, and it is thus deposited in and forced along the extrusion chamber and through the extrusion opening between the core c^4 and the die d^1 on to the cable which is drawn through the sleeve c^3 in the ordinary way. (John Stratton of Bowden and Ernest Alexander Claremont of High Legh, England. United States patent No. 1,302,484.)

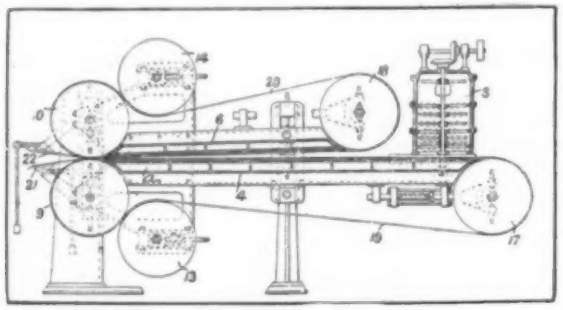
RUBBER SHEET-FORMING AND CURING APPARATUS.

Vulcanized rubber sheets are produced by pressure between converging travelling metal belts which are progressively steam-heated so that the temperature is increased until the vulcanization point is reached near the delivery end of the bands.

The belts 19, 20 are carried by vertically adjustable power-driven rollers 9, 10 and by idler rollers 17, 18 capable of both vertical and horizontal adjustment. Positively driven pressure-rollers 13, 14 capable of horizontal adjustment are provided to engage the belts.

Below and above the belts 19, 20, respectively, are platens 4 and 6, divided into chambers which are supplied with steam through pipes controlled by hand or pressure-operated valves. Steam first enters the compartments *a* so that the temperature increases from the point at which the rubber is delivered from a vertically-adjustable spreader S to the delivery end of the

machine where vulcanization is effected. Weighted scrapers 21, 22 serve to free the rubber sheet from the belts. (J. Porzel, 199



SHEET-FORMING AND VULCANIZING MACHINE.

Glenwood avenue, Buffalo, New York. British Patent No. 124,888. See United States Patent No. 1,308,111.)

OTHER MACHINERY PATENTS.

THE UNITED STATES.

NO. 1,305,408. Vulcanizing apparatus. J. E. Rasor, Sherman, Tex.
1,305,474. Vulcanizing apparatus with endless series of mold sections. G. H. Lewis, assignor to The Fisk Rubber Co.—both of Chicopee Falls, Mass.
1,306,008. Repair vulcanizer. S. W. Harris, assignor to The Akron Rubber Mold & Machine Co.—both of Akron, O.
1,306,098. Tire-unwrapping machine. C. Brown, Knoxville, assignor of ½ to both B. F. and F. J. Lively, Lenoir City—all in Tennessee.
1,306,588. Insulated-wire-stripping machine. M. C. France, Cleveland, O.
1,306,649. Apparatus for manufacturing substitute leather. E. Wernheim, New York City.
1,306,679. Apparatus for forming storage-battery containers. J. M. Ahlgren, Indianapolis, Ind.
1,307,079. Apparatus for curing tire casings. P. P. Borigio and E. Stephenson, both of Fort Worth, Tex.
1,307,372. Tire mold. K. A. Palmer and J. C. Irvin, New York City.
1,307,435. Collapsible tire-core. E. J. Bundy, assignor to The McGraw Tire & Rubber Co.—both of East Palestine, O.
1,307,788. Apparatus and process for making asbestos gaskets. E. Nall; E. A. Nall, executrix, assignor to The Goodyear Tire & Rubber Co.—both of Akron, O.
1,307,796. Collapsible mold for retreading tires. P. M. Stephen, San Francisco, Calif.

REISSUE.

14,663. Rubber-mixing mill. H. J Hoyt, assignor to Morgan & Wright—both of Detroit, Mich. (Original No. 1,163,089, dated December 7, 1915.)
1,308,111. Vulcanizing machine. J. Porzel, assignor to City Trust Co.—both of Buffalo, N. Y. See British patent No. 124,888, described above.
1,308,132. Apron for plastic-mixing mills. H. A. Welton and H. J. Hoyt, assignors to Morgan & Wright—all of Detroit, Mich.
1,308,292. Tire-bead-drying apparatus. G. McNeill, assignor to Morgan & Wright—both of Detroit, Mich.
1,308,479. Machine for trimming rubber articles. D. R. Campbell, Boston, assignor to F. Rumrill, Newton—both in Mass.
1,308,517. Tire vulcanizer. J. K. Williams, assignor to The Williams Foundry & Machine Co.—both of Akron, O.

THE DOMINION OF CANADA.

190,925. Tire-building machine. E. Hopkinson, New York City, U. S. A.
190,926. Tire-building machine. E. Hopkinson, New York City, U. S. A.

THE UNITED KINGDOM.

124,873. Vulcanizing press. Dunlop Rubber Co., C. Macbeth, and H. Willshaw, 14 Regent street, Westminster, London.
124,998. Tire mold. E. Hopkinson, 1790 Broadway, New York City, U. S. A.
125,071. Apparatus for making cord tires. J. D. Thomson, 377 Buckingham street, Akron, O., U. S. A. (Not yet accepted.)
125,705. Calender for rubber strips. Dunlop Rubber Co., C. Macbeth, and H. Willshaw, 14 Regent street, Manchester.

THE FRENCH REPUBLIC.

489,973. Improvements in apparatus for the manufacture of rubber tubing and other similar articles by compression. J. Stratton and E. A. Claremont. See United States patent No. 1,302,484, described in this issue of THE INDIA RUBBER WORLD.
20,713/487,958. First certificate of addition to patent taken out November 28, 1918, for apparatus and process for impregnating and coating fabric with balata without the use of solvents. Société L. François & Cie. See United States patent No. 1,285,105, described in THE INDIA RUBBER WORLD, February 1, 1919.

PROCESS PATENTS.

THE UNITED STATES.

NO. 1,305,801. Manufacturing pneumatic tires. E. Hopkinson, New York City.
1,306,602. Retreading tires. F. E. McEwen, assignor to S. H. Goldberg—both of Chicago, Ill.
1,308,014. Treatment of vulcanizable plastic material. R. B. Price, New York City, assignor to The Rubber Regenerating Co., Naugatuck, Conn.
1,308,379. Improved method of making pneumatic-tire casings. E. H. Trump, Akron, O.

THE DOMINION OF CANADA.

190,927. Manufacturing pneumatic tire casing. E. Hopkinson, New York City, U. S. A.
190,928. Manufacturing pneumatic tire casing. E. Hopkinson, New York City, U. S. A.

THE FRENCH REPUBLIC.

489,462. Production of artificial sole leather. E. W. Ericsson.
489,543. Waterproofing fabrics and textiles. C. Baron and F. Bonnier.
489,581. Economical process of manufacturing soles and pattens for shoes, permitting the combined use of suitable raw materials. Société Française du Cuir Armé.
489,672. Process for waterproofing, applicable to all fabrics. A. Monlong, 68 rue de la Colombette, Toulouse (Haute-Garonne).
490,170. Production of a plastic substance with textile surfacing. Société Anonyme Nouvelle l'Oyonnithe.
490,382. Utilization of pneumatic tire casings for making lounging shoes of all kinds. V. C. Thénaut and L. Méliorat.

THE EWALD TIRE RETREADER.

That two worn casings, properly stapled together with the machine here pictured, will give from 1,000 to 3,000 miles of service, is of interest to tire dealers, repair men and tire users generally.

TIRE-STAPLING MACHINE.

The operation is extremely simple. Having two worn tires of the same size, cut the treads from the best one and slip it over the other casing. Insert a staple in the holder and push it all the way down, then place the tire over the machine table, setting the gauge so that the staples will be three-eighths of an inch from the outer casing edge. A forward movement of the handlever forces the staple through the casings and clinches it. This operation is repeated around the tire on both sides, setting the staples about one inch apart. A three-quarter-inch reliner strip of gummed fabric is then placed over the staples and the tire is ready for the road. (Romort Manufacturing Co., Oakfield, Wisconsin.

NEW ZEALAND RUBBER MANUFACTURING COMPANY.

The New Zealand Rubber Products, Ltd., 181 Featherston street, Wellington, New Zealand, has been formed, with a capital of £100,000, for the manufacture of various kinds of rubber goods. Samples of the rubber goods made by this company were recently shown at Auckland.

AT THE ROYAL SHOW, CARDIFF.

The India Rubber, Gutta Percha and Telegraph Works Co., Silvertown, Essex, exhibited its pneumatic-tire-making machine in operation at the recent show of the Royal Agricultural Society at Cardiff, June 24-28, 1919.

In addition, the Palmer Tyre, Limited, was the only other tire manufacturer that exhibited. The two companies showed airplane landing-wheel tires, and motor-vehicle tires with ribbed and studded treads.

New Goods and Specialties.

BALLOON ACCESSORIES OF RUBBER.

THE EXIGENCIES OF THE WAR resulted in the development of balloons as aids to the Army and Navy in a thoroughly practical way. Concentrated effort and the application of the knowledge of rubber and its possibilities by the large rubber manufacturers, even though their aeronautical experience was limited, resulted in wonderful achievements. One of the former obstacles to the practical use of the balloon was the inability to control its movements. Modern inventive genius has overcome this in several different ways, applicable to the different types of balloon.

GAMMETER VALVE AND BALLOON EQUIPPED THEREWITH.

THE GAMMETER VALVE.

Balloons in the early days could not be better controlled because no means had been devised for regulating the supply of gas used for inflation. Hydrogen gas, the lightest known, which weighs only one-fifth as much as air, is used for inflating balloons. Great care must be taken to preserve uniform pressure. When a balloon ascends or descends and passes from one atmospheric stratum to another, the outside air pressure decreases and the hydrogen gas within the balloon expands correspondingly. Some means must be available for counterbalancing this.

In the recent war a valve was devised which accomplished this purpose. Called the Gammeter valve, from the name of the man who invented it, the device regulates automatically the pressure of gas within the balloon, releasing enough gas to insure proper stabilization. When greater inflation is afterward required, the gas already released cannot be replaced. Resort has been made to a series of secondary balloons called ballonets, constructed within the balloon proper, which are filled with air by a blower when required. These, together with the Gammeter valve, permit the regulation of ascent and descent. The accompanying illustration shows two views of the valve and the way in which it is inserted in a balloon.

GOODRICH AIRPLANE WHEEL AND WINDSHIELD.

AIRPLANE-WHEEL WINDSHIELD.

Rubber tires on airplane-wheels proved to be just as great a necessity as on automobiles and just as efficient but for the fact that the wheel offered a small amount of resistance to the air passing through its spokes. In these days of exact scientific calculation of ultimately important effects, even this slight resistance must be reckoned with. Accordingly, a windshield for airplane wheels was devised, shown in the lower left-hand corner of this page. This windshield is made of rubber and can be readily adjusted or removed from the wheel, as desired or required.

This shield is so constructed that the air particles glance off with as little interference as possible with the revolution of the wheel. Many of Uncle Sam's training planes, bombing machines, and reconnaissance planes were equipped with these rubber-tired wheels.

AIRPLANE BUMPER CORD.

In order to minimize the shocks of landing in an airplane, some device was needed to provide more play or spring in the mounting of the frame-work on the axle, and this spring must be so mounted as to prevent the frame-work from touching the ground.

Experiments in this direction led to the development of bumper cord, which is now in universal use. It consists of many small strands of rubber, covered with two jackets of cotton thread woven in just the right way. The cord is very supple and exceptionally strong. By its use, the frame-work of an airplane is practically swung to the axle, and much the same result is produced as is effected by the spring in the corresponding place in an automobile. This provides a considerable degree of safety for the aviator in neutralizing landing shocks. A photograph of a section of this cord is reproduced herewith. (The B. F. Goodrich Co., Akron, Ohio.)

GOODRICH BUMPER CORD.

COLD-PACK PROCESS JAR-RUBBERS.

Two new brands of jar rubbers intended to be used in canning fruits and vegetables by the cold-pack process have recently been produced. This process requires jar-rubbers that will withstand the effect of a considerable degree of heat and which, therefore, must be made of a high quality of rubber. One of these brands is known as the "Usco Kold Pak." (United States Rubber Co., New York City.) The other, on which the trade-mark has just been patented, is called the "All Pack." (Acme Rubber Manufacturing Co., Trenton, New Jersey.)

AVIATOR'S MAIL-POUCH.

UNSINKABLE RUBBER MAIL-POUCH.

An aviator's mail-pouch, unsinkable and watertight has recently been put on the market. It is made of black rubberized material, with high-gravity pliable rubber composition base which keeps the pouch upright in water. A kapok lining provides buoyancy. The pouch is 16 inches high, 14 inches wide, and 3 inches deep at the base, weighing about 5 pounds. (Safety-at-Sea Corp., 1358 Broadway, New York City.)

THE "GOOD LUCK" JAR-RINGS.

In the successful preserving of fruits and vegetables, the jar-ring plays a most important part. On its ability to make and maintain a perfectly air-tight seal depends the success.

"GOOD LUCK" JAR-RINGS.

A brand of red rubber jar-rings which has a very widely extended sale, has filled every requirement and stood every test established. The rings fit the standard types of fruit-jars, are made of a high-grade compound, and are packed by the dozen in attractive cartons which are sealed air-tight before leaving the factory. The cut shows the package in which this particular brand of jar-rings is sold. (The Boston Woven Hose & Rubber Co., Cambridge, Mass.)

A SHAVING OUTFIT "ALL-IN-ONE."

Many men who shave themselves will appreciate the shaving convenience illustrated below. A metal case contains, in one piece, a shaving brush, shaving cream, and talcum powder. The brush itself is of good quality of bristles vulcanized in rubber, having a ferrule which screws on the handle. In this ferrule is a tube which connects with the compartment next to the brush, containing soap or shaving cream, and permits the cream to pass through into the bristles. When the brush is removed, the

THE "ALL-IN-ONE" SHAVING BRUSH.

cream compartment can be filled easily. The other half of the handle is a container for talcum powder, arranged on the telescope principle in such a way that it acts as the piston for forcing the shaving cream through the tube into the brush. On the end of the powder compartment is a perforated screw-cap so shaped that the whole device may be stood upright on this cap when desired. The metal parts of the "All-in-One" shaving brush, as this novelty is called, are made of aluminum and holds sufficient material for thirty-five shaves. (All-in-One Brush Co., Bloomington, Illinois.)

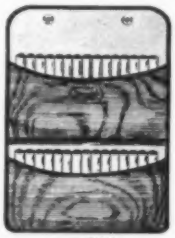
AN EASILY ATTACHED RUBBER HEEL.

A new type of rubber heel has recently been put on the market which permits easy and speedy attachment. It is manufactured by modern methods necessary for the production of high-grade rubber heels.

The "Beaded Tip" rubber heel is concave-convex in shape, with a suction back and central nailing space which facilitates attachment to boots or shoes. Besides, there is a liberal allowance for trimming so that the heel may be fitted to a leather one of any shape. Distribution is through recognized jobbers. (United Lace & Braid Manufacturing Co., Providence, Rhode Island.)

"BEADED TIP" RUBBER HEEL.

AN ENGLISH DEVICE FOR WEARING FLOWERS IN THE BUTTONHOLE or on the corsage takes the form of a nipple or tiny cloth-covered rubber bottle to hold water and prevent the wet stems of flowers from coming into contact with the gown. (Rubber Growers' Assn., London.)



PAT PNDG
"SMOKES."

A NEW CIGARETTE CASE.

A high-grade pocket-case for holding cigarettes has appeared, which has a rubber lining to protect the contents from moisture. This case, shown in the accompanying illustration, provides space for thirty cigarettes, in two separate pockets which fold together and are held in place in convenient pocket size by a flap which snaps down with two fasteners. The case itself is made of grosgrain moire silk, in olive-drab. (Crown Suspender Co., 836 Broadway, New York City.)

"STRAIGHT-LEG" GARTER.

A BOON FOR THE BOW-LEGGED MAN.

Somebody has recognized the predicament of the bow-legged man who, through no fault of his own, so often makes a ridiculous appearance when he most desires to look dignified and normal. A band of elastic which goes around the leg just above the knee forms the foundation for the device. From this extend downward two pieces of non-elastic tape, one attaching to the sock. The other is connected with the sock-supporting one by four strips of silver-finished tool steel, slightly weighted. When the wearer stands, the steel strips are in a horizontal position, holding out the second tape and preventing the trousers from following the curve of a bowed leg. When the wearer is running, sitting down, etc., the steel strips swing back into perpendicular position against the inner fabric strip. This prevents any bulging of the trousers. (S-L Garter Co., Dayton, Ohio.)

A BATHING BAG.

A rubberized bathing bag known as the "Jiffy-Lock," is one of the newest bathing accessories. The bag or case itself is made of double-texture rubberized fabric of heavy quality, in four sizes. The feature of the case is its fastening. This is a device on which a patent has been applied for, taking the form of two metal laces down the edges of the opening, which are opened and closed by the sliding of a cord with a convenient ball on the end. The bag comes in blue, khaki, and black and has a hand-size strap for carrying, on one end. When the case is empty it folds flat and when filled is square at the ends. (The Jiffy Lock Co., 20 West 20th street, New York City.

"JIFFY-LOCK" BATHING BAG.

Rubber Sundries Manufacturers' Division of the Rubber Association.

AWAY BACK IN 1898 a few manufacturers of druggists' and stationers' rubber sundries met at the office of The B. F. Goodrich Co. in New York City, and discussed the possibility of forming a trade association "to bring the members of this industry into closer touch and to insure cooperation between them for their mutual benefit, upon the basis of honor and good will."

Resulting from this preliminary gathering, a meeting was held on September 9 of that year, at the Fifth Avenue Hotel in New York, at which the Rubber Sundries Manufacturers' Association was organized and the following officers were elected:

H. C. Corson, president, The B. F. Goodrich Co., Akron, Ohio; Rhodes Lockwood, vice-president, Davidson Rubber Co., Boston, Massachusetts; Fred H. Jones, treasurer, Tyer Rubber Co., Andover, Massachusetts; E. E. Huber, secretary, Eberhard Faber Rubber Co., Brooklyn, New York.

EXECUTIVE COMMITTEE: G. F. Hodgman, Hodgman Rubber Co., Tuckahoe, New York; Joseph Davol, Davol Rubber Co., Providence, Rhode Island; G. M. Allerton, The Seamless Rubber Co., New Haven, Connecticut; H. C. Burton, Parker, Stearns & Sutton, Brooklyn, New York.

CHARLES J. DAVOL, *Chairman.*

H. A. BAUMAN, *Vice-Chairman.*

Besides these, there were present, as charter members of the Association: F. T. Carleton, Tyer Rubber Co., Andover, Massachusetts; G. F. Simpson, Ideal Rubber Co., Brooklyn, New York; G. W. Frost and James Kipp, Goodyear Rubber Co., New York City; C. Van Vliet, Goodyear's India Rubber Glove Manufacturing Co., Naugatuck, Connecticut; J. C. Hardman and J. Hardman, Riverside Rubber Co., Belleville, New Jersey; J. W. Kelley and A. T. Bell, The B. F. Goodrich Co., Akron, Ohio: H. H. Shepard, National Rubber Co., Providence, Rhode Island; R. D. Pierce, Mechanical Rubber Co., Cleveland, Ohio; W. G. Brewer, Mattson Rubber Co., Lodi, New Jersey.

At this meeting a motion was made that each member present a list of his customers which he deemed worthy of special consideration, these lists to be combined and acted upon by the executive committee. Such a list was prepared, printed and distributed to the members, and was later known as the famous "Jobbers' List," which was a source of trouble from its adoption, because of the constant additions of houses which the various manufacturers deemed worthy of preferential discounts.

Another motion adopted was that members of the Association should sell goods to other members at minimum prices, subject to a courtesy discount of 5 per cent, and this was later increased to 10 per cent by common consent.

Each year an annual banquet was held in the spring. In the fall came the annual meeting, at which routine business was transacted and officers were elected. The third annual meeting, held October 3, 1901, was attended by only ten members, and owing to the apparent indifference shown by the absent members, it was deemed advisable to disband the organization.

By 1903, however, it was felt that there was need for some such association, and after some preliminary work, a meeting of sundries manufacturers was held April 3, at the Fifth Avenue Hotel, which was attended by Messrs. Burton, Hodgman, Hardman, Lockwood, Jones, Allerton and Huber, of the old association, with the following: H. E. Raymond, The B. F. Goodrich Co., Akron, Ohio; G. B. Hodgman, Hodgman Rubber Co., Tuckahoe, New York; G. W. Front, Goodyear Rubber Co., New York City, and A. C. Eggers, Goodyear's India Rubber Glove Manufacturing Co., Naugatuck, Connecticut.

E. E. HUBER,

S. H. JONES,

W. H. BALCH,

W. S. DAVISON,

A. W. WARREN.

Executive Committee of the Rubber Sundries Manufacturers' Division.

A constitution was adopted, and the following officers elected: Joseph Davol, president; H. H. Shepard, vice-president; F. H. Jones, treasurer; E. E. Huber, secretary. EXECUTIVE COMMITTEE: G. F. Hodgman, H. E. Raymond, F. H. Jones, E. E. Menges, A. C. Burton, Joseph Davol and E. E. Huber.

Committees were appointed to prepare reports on "Dating and Cash Discounts," "Payment of Freight on Deliveries to Customers," "Inequality of List Prices," and "Indiscriminate Returns of Goods to Manufacturers."

Thus the new, or the revived association started off with important trade customs to be considered, and at subsequent meetings new questions were debated, other trade abuses eliminated, new members were admitted, and a flourishing, active, efficient association resulted.

In October, 1912, the association was incorporated under the laws of Connecticut, and the old association was dissolved at a meeting the following January. Among the important actions of the organization was the adoption of an "Official Association Guarantee to the Trade," the defeat of "House Bill No. 578," State of Georgia, requiring the stamp of date and year of manufacture on rubber goods offered for sale in that state; the standardization of invalid rings; the adoption of a credit-experience bureau; the establishment of a price exchange bureau, besides the good work of George B. Hodgman as representative of the association before the Senate Finance Committee on Tariff, whereby the tariff on druggists' sundries was reduced from 35 per cent to 15 per cent. Later actions include measures to prevent sales of sundries where it was suspected they would be smuggled into Germany, and measures taken to eliminate unnecessary sizes and styles of goods.

At the annual meeting, April 9, 1914, President Hodgman addressed the members informally, suggesting that the organization become a division of The Rubber Association of America, and at the meeting held January 13, 1915, a vote was passed to that effect, the same taking effect at the annual meeting, April 8, with Russell Parker, chairman; Charles J. Davol, vice-chairman, and H. S. Vorhis, treasurer and secretary.

In each of the twenty-one years since its inception, the organization has held an annual banquet at one or another leading hotel in New York City, noted for the elegance and excellent taste shown in every detail. At these gatherings businss is taboo, and rarely are outsiders invited, nor are there any prepared addresses, such remarks as are made being impromptu, and, generally, professional talent is secured for entertainment. These dinners have continued since the organization has been merged with The Rubber Association, and detailed reports of these carefully planned functions have appeared in THE INDIA RUBBER WORLD.

The present officers of the division are: C. J. Davol, chairman, Davol Rubber Co.; H. A. Bauman, vice-chairman, The B. F. Goodrich Co.; A. L. Viles, secretary and general manager, The Rubber Association of America, Inc.

EXECUTIVE COMMITTEE: C. J. Davol, Davol Rubber Co.; S. H. Jones, U. S. Rubber Co., Goodyear Glove Division; H. A. Bauman, The B. F. Goodrich Co.; W. H. Balch, Faultless Rubber Co.; E. E. Huber, Eberhard Faber Rubber Co.; A. W. Warren, Hodgman Rubber Co.; W. S. Davison, Miller Rubber Co.

The present membership is composed of the following companies: American Hard Rubber Co., Canton Rubber Co., Davol Rubber Co., Easthampton Rubber Thread Co., Empire Rubber & Tire Corp., Eberhard Faber Rubber Co., Faultless Rubber Co., The B. F. Goodrich Co., U. S. Rubber Co, Goodyear Glove Division, Hodgman Rubber Co., Miller Rubber Co., Parker, Stearns & Co., Rubber Products Co., Revere Rubber Co., Seamless Rubber Co., Tyer Rubber Co., Whitall-Tatum Co.

Activities of The Rubber Association, Inc.

DURING THE PAST MONTH communications have been sent to firm members concerning Federal excise tax matters, standardizing catalog sizes, and a circular respecting the importation of German dyes.

FEDERAL EXCISE TAXES RELATING TO CERTAIN INDIRECT SALES.

NEW YORK, June 30, 1919.

To firm members of the Rubber Association of America, Inc.:

Under date of May 15 the following inquiry was submitted to the Commissioner of Internal Revenue:

> Sales of articles mentioned in Section 900, Subdivisions 1 and 2, when made direct by the manufacturer thereof, are, in certain cases, on presentation of proper proof exempt from tax. This is true in the case of:
>
> (a) Sales to a state or political subdivision thereof.
> (b) Sales of parts and accessories for trailers.
> (c) Sales for export.
> (d) Sales to a manufacturer of automotive vehicles for use by him in the manufacture or production of new cars, etc.
>
> Where, in accordance with usual established methods of distribution, the article in question, after passing through the hands of a jobber or dealer or other legitimate intermediary, reaches a class of consumers, such as a state government, or a particular use, such as an accessory for a trailer, or an ultimate disposition, such as a sale for export, should not the manufacturer of the article, having paid a tax on the sale by him, and having passed the tax on to the intermediary, be permitted, upon the receipt of proper proof of subsequent disposition, to refund to the intermediary, and in turn take credit from the government of the amount of the tax paid.

Under date of June 13 the Commissioner of Internal Revenue replied to such inquiry as follows:

> Reference is made to your letter of May 15, 1919, relative to Regulations 47, relating to (a) sales to a state or political subdivision thereof; (b) sales of parts and accessories for trailers; (c) sales for export; (d) sales to a manufacturer of automotive vehicles for use by him in the manufacture or production of new cars.
>
> This office has given very careful consideration to your suggestions with reference to modifying the afore-mentioned regulations and believes that the regulations in their present form are correct and that no further change should be made.

The tax in question is a tax on sales by the manufacturer of the article and it will be noted from the above that the exemptions of certain sales by the manufacturer from the tax apply only in the cases where the sale is made by the manufacturer of the article. For instance, in the case of a sale by a manufacturer to a dealer, who, in turn, sells the article either

> (a) to a state or political subdivision thereof,
> (b) for use on trailers,
> (c) for export, or
> (d) to a manufacturer of automotive vehicles for use by him in the manufacture or production of new automotive vehicles,

even if such dealer furnishes the manufacturer of the articles sold proof that the dealer has so sold the article, the manufacturer of the article cannot obtain a refund or take credit for any tax paid to the Government or which has attached to the original sale by the manufacturer of the article.

THE SECRETARY.

STANDARD CATALOGS.

NEW YORK, July 3, 1919.

To firm members of The Rubber Association of America, Inc.:

This has reference to my letter of November 8, having to do with the propaganda being carried on in certain quarters, particularly by the National Association of Purchasing Agents and the National Retail Hardware Association for the adoption by commercial business organizations of a standard catalog size which would be 7½ by 10⅝ inches or its approximate half size, 5-5/16 by 7½ inches.

As a matter of further information in this connection, I enclose copy of a pamphlet entitled "Underlying Principles of the National Standard Catalog Size," prepared by the Standardization Committee of the National Association of Purchasing Agents.

A. L. VILES, General Manager.

EXECUTIVE COMMITTEE MEETING.

The Executive Committee met on July 11, 1919, after luncheon, at the Union League Club, New York City.

Those present were H. E. Sawyer, B. G. Work, George B. Hodgman, J. A. Lambert, W. J. Kelly and General Manager Viles.

Following the disposition of routine matters, questions of moment were discussed and definite action taken, the most important being the appointment of William C. Cox, vice-president of the Guaranty Trust Co., as treasurer of the Rubber Association.

IMPORTATION OF GERMAN DYES.

NEW YORK, July 17, 1919.

To the firm members of The Rubber Association of America, Inc.:

There has been received under date of July 15, from the War Trade Board, Washington, a copy of the enclosed circular having to do with the importation of German dyes for the use of manufacturers in this country.

The War Trade Board has urgently requested that they be furnished with a list of the members of this Association who are users of dyes in order that the Board may obtain information as to their needs direct from them. It is particularly emphasized that the information thus obtained will be treated confidentially and the individual response of manufacturers will not be disclosed.

Will you not, therefore, in compliance with this request respond immediately with the advice to this office as to whether or not you are interested in the use of dyes to the end that the interests of our manufacturers in this direction may properly be taken care of.

A. L. VILES, General Manager.

FEDERAL EXCISE TAX—RECENT RULINGS—FROM THE DEPARTMENT OF INTERNAL REVENUE.

New York, July 24, 1919.

To the firm members of The Rubber Association of America, Inc.:

Under date of June 10, the Department issued additional regulations known as Treasury Decision 2860.

RECORDS TO BE KEPT BY MANUFACTURERS.

Treasury Decision 2860 provides that the person responsible for the return and payment of the tax under Section 900 of the Revenue Act shall keep such records and memoranda as will clearly show the amounts of sales of taxable articles for each month, and that the tax may be computed upon the gross amount of taxable sales during the month for which the return is made.

RESALE OF PARTS AND ACCESSORIES BY MANUFACTURER.

Treasury Decision 2860 also provides that when an automobile manufacturer prior to issuance of Regulations 47 (May 1, 1919), billed as a separate item and collected tax upon the resale of parts to dealers, and where it is impracticable to adjust the tax in accordance with Regulations 47, the total amount of the tax collected shall be paid to the tax collector. The manufacture of parts which are resold by the manufacturer of motor vehicles will be exempt from tax upon such sales, provided he has on file a certificate from the automobile manufacturer to the effect that the parts purchased by such manufacturer on or after February 25 and prior to May 1 had either been used in the manufacture of new cars or will be so used, or that the tax upon such parts therefor sold by the automobile manufacturer will be paid directly to the collector. This ruling allows the manufacturer of motor vehicles to return direct to the collector the tax on tires and parts purchased between February 25 and May 1 and resold otherwise than as original equipment by the motor vehicle manufacturer. This privilege is not extended beyond April 30.

REPAIR MATERIALS.

The Rubber Association has been advised that in a letter signed by Deputy Commissioner Walker, addressed to a member of the Association, it is held that unvulcanized sheet rubber, liquid rubber vulcanizing cement and friction fabric sold in bulk are not taxable although primarily designed for the special purpose of being used to repair tires, either as a small sectional repair or as a complete retread, and although sold to shop repair men who repair tires for car owners or who rebuild tires for owners or for resale. The sale of such articles, however, when sold in packages or containers as repair parts for tires or inner tubes for motor vehicles, is taxable. It is the interpretation of the Rubber Association that by "sales in bulk" is meant sales in such quantities as are usually made to repair men, and that by "sales in packages or containers" is meant sales in packages or containers of such sizes as are usually sold to owners of motor vehicles for repairs by them.

REFUND ON ACCOUNT OF PRICE DECLINE.

The Rubber Association is informed that in a letter of recent date signed by Commissioner Roper and addressed to a member of the Association, it is held that no credit can be taken by a manufacturer on account of a refund of tax made by him to a customer on account of a decline in the price of articles previously sold. It is stated where an article which has once been the subject of a sale and as to which the tax of 5 per cent of the sales price has been paid or is attached by operation of law, no refund or remission can be made by reason of a subsequent readjustment or reduction in the price of such articles. Several of the members of the Association have expressed a belief that the ruling does not conform to the manifest intent of the law, and that the Department will recede from this interpretation. The Rubber Association has no opinion upon this subject, and each member should act as in his judgment is proper.

INSULATED WIRE NOT TAXABLE.

The Rubber Association is also advised that in a recent letter by the Department of Internal Revenue, it is held that the sale of insulated wire, although suitable for general wiring of motor vehicles, is not taxable. It is the opinion of the Rubber Association that this ruling is meant to apply to all insulated wire except that which is commercially known as "assembly cables." By "assembly cables" is meant an assembly of wires cut to length and bound together for use on motor vehicles. It is the opinion of the Association that the sale by the manufacturer of such wire when so cut to length and bound together, is taxable.

A. L. VILES, General Manager.

TREASURER OF THE RUBBER ASSOCIATION.

WILLIAM C. COX, the recently appointed treasurer of The Rubber Association of America, Inc., succeeding H. S. Vorhis, resigned, has been a vice-president of the Guaranty Trust Co. of New York since 1912, when the Standard Trust Co., of which he was an organizer and secretary, was merged with the Guaranty company. In July, 1918, he was commissioned a captain in the Sanitary Corps of the National Army and assumed charge of the funds at the Medical Supply Depot in New York City, a work for which his assignment to the trust department of the Guaranty organization well fitted him. After the signing of the armistice he returned to the Guaranty Trust Co. and is now located at the company's Fifth Avenue office.

(C) Underwood & Underwood, N. Y.

WILLIAM C. COX.

The Rubber Association is fortunate in securing the services of Mr. Cox, and his appointment is in line with the larger activities of that organization, which have become such that the duties of a secretary-treasurer were too onerous.

NEW FREIGHT RATING ON CRUDE RUBBER SHIPMENTS.

During the past eight years the official classification ratings on crude rubber shipments by rail have been in dispute, and numerous complaints against the leading railroads have lately been lodged with the Interstate Commerce Commission by The Goodyear Tire & Rubber Co., McGraw Tire & Rubber Co., Racine Auto Tire Co., La Crosse Rubber Mills Co., Kelly-Springfield Tire Co., Batavia Rubber Co., and the Northeastern Ohio Rubber Shippers' Association, an organization of fifteen rubber companies. These complaints attacked as unreasonable and unduly prejudicial the ratings of second-class, less-than-carloads, and carloads, minimum weight 36,000 pounds, and asked that ratings be established as follows: carloads, fourth class; less than carloads, third class. Later a fifth-class rating was asked on carload shipments with a minimum weight of 40,000 pounds.

The complaints were consolidated and heard upon a single record, and in the decision rendered June 2, 1919, it was found that the present second-class rating on less-than-carload shipments of crude rubber had not been shown to be unreasonable, but the railroads were ordered on or before October 15, 1919, to adopt on carload lots a rate not in excess of fourth class, with a minimum weight of 40,000 pounds.

BUY WAR SAVINGS STAMPS—BUILD FOR AMERICAN PROSPERITY and your own success.

RUBBER INDUSTRIES ATHLETIC LEAGUE.

THIS ORGANIZATION of the office employes of the rubber companies in New York City is now in a flourishing condition which promises to continue, thanks to the diligent work of its officers.

Plans for an outing are in the making and this promises to be an affair of large proportions, as some 5,000 persons are employed in the offices of New York rubber companies.

The baseball competition, however, takes first place among the activities of the League. Excellent teams have been organized by the Sterling, Kelly-Springfield, Goodyear, United States, Globe, Firestone, Goodrich and Ajax men and real progress is being made. The players are gradually becoming acquainted with inside plays and before the season is over some very interesting games will undoubtedly be played. Several of the teams have been greatly assisted by well-known ball players now in the rubber industry, notably Jack Kleinow, a former "Yankee," and Dan McEnery, a New York player, respectively coach and pitcher of the United States team, and Max Halker, former Cleveland pitcher, of the Kelly-Springfield team.

Several trophies to be presented at the end of the season to the best teams and players have been donated and will be shown in the display windows of the various member companies. The handsome sterling silver trophy cup given by THE INDIA RUBBER WORLD, which will go to the team finishing the season in first place, is shown by the accompanying illustration. It stands 19¼ inches in height on its ebony base and depicts the landing of Columbus in 1492 and his discovery of the Indians playing ball. A pennant will also be awarded, the gift of the Kelly-Springfield Tire Co. Another trophy cup, donated by Baker, Murray & Imbrie, Inc., will be presented to the team finishing next best. A dozen watch fobs, offered by A. G. Spalding & Bros., are to be awarded to the best twelve individual players.

INDIA RUBBER WORLD BASEBALL TROPHY CUP.

RUBBER FROM CORUMBA (BRAZIL) AND PUERTO SUAREZ (BOLIVIA).

CORUMBA.

THE BRITISH VICE-CONSUL reports that exports of rubber from the Corumba district during the years 1912-18 have been as follows:

1912	*kilos* 680,364	1915	349,178
1913	554,387	1916	*kilos* 418,219
1914	534,213	1917	291,652
		1918	317,433

Firms ship on consignment or act as forwarding agents. Very little rubber is shipped on their own account. A considerable part of the rubber exported from Corumba is received from Puerto Suarez, Bolivia.

There are no local indications that enemy firms are taking steps to extend their sphere of influence amongst the rubber gatherers. The rubber from the privately-owned plantations is obtained by the plantation owners. A small quantity is obtained from private persons who work on some plantations.

In the Brazilian district, of which Corumba is the outlet, all firms interested in the trade are Brazilian with one exception (an Italian firm). In the Bolivian district the owners are Bolivian, British, and German.

No stock of rubber is held at Corumba; it is always shipped by the first available boat after its arrival from Cuyaba or Caceres.

Only a very small proportion of the Brazilian rubber shipped from Corumba is "Pará." Pará rubber is grown in the North of Matto Grosso, but is shipped via the Amazon.

The Brazilian shipments from Corumba are of the coagulated (smoked) variety known under the general name of "seringa" (*Hevea brasiliensis*) and subclassified as "fina," "entrefina," and "sernamby." From 8 to 10 per cent of the total quantity shipped from Corumba is known as "mangaba."

The plantations in Brazil, of which Corumba is the outlet, are situated in the valleys of the rivers Arinos, Juruema, Tapajoz, and their many affluents. No information is available as to the localities.

PUERTO SUAREZ.

Exports of rubber from the Puerto Suarez district during the years 1912-17 have been as follows:

1912	*metric tons*	182
1913		164
1914		104
1915		219
1916		214
1917		185

In Bolivia the barter system largely prevails, and the firms which obtain their rubber in this manner have usually imported their supplies of merchandise direct from Europe or the United States. Since the institution of the Statutory List enemy firms in Bolivia have, to some extent, through subterfuge, obtained supplies from Brazil.

The Bolivian rubber shipped through Corumba consists of 90 per cent Pará and 10 per cent sernamby.

The bulk of the Bolivian rubber exported through Puerto Suarez and Corumba is grown in the Department of Santa Cruz, in the Province of Nuflo de Chavez. The forests are situated about 500 miles from Suarez. ("Board of Trade Journal," London.)

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News of the American Rubber Industry.

DIVIDENDS.

THE AMERICAN CHICLE CO., New York City, declared a dividend of one per cent, payable August 1, on stock of record July 21, 1919.

The Eagle-Picher Lead Co., Chicago, Illinois, declared a quarterly dividend of one and one-half per cent, payable July 15, on preferred stock of record June 5, 1919.

The B. F. Goodrich Co., Akron, Ohio, has declared its quarterly dividend of $1 per share, payable August 15, on stock of record August 5, 1919.

The Kelly-Springfield Tire Co., New York City, declared a quarterly cash dividend of $1 per share and a quarterly dividend of three per cent, payable in common stock, both payable August 1, on common stock of record July 17, 1919.

The Keystone Tire and Rubber Co., Inc., New York City, has declared a stock dividend of fifteen per cent, payable September 15, on stock of record September 2, 1919.

The McLean Tire and Rubber Co., East Liverpool, Ohio, declared a dividend of two per cent, payable on preferred stock as of July 1, 1919.

The Needham Tire Co., Charles River, Massachusetts, has declared its regular semi-annual dividend of three and one-half per cent, payable August 1 on issued and outstanding preferred capital stock of record July 15, 1919.

The New Jersey Zinc Co., New York City, declared a quarterly dividend of four per cent, payable August 9, on stock of record July 31, and an extra dividend of two per cent, payable July 10, on stock of record June 30, 1919.

The Pan-American Rubber Co., Milwaukee, Wisconsin, declared a dividend of three and one-half per cent, payable in July on preferred stock of record June 30, 1919.

The Portage Rubber Co., Akron, Ohio, has declared a quarterly dividend of three per cent, payable August 15, on common stock of record August 5, 1919.

The Sewell Cushion Wheel Co., Detroit, Michigan, on June 1, 1919, declared and paid a dividend of seven per cent, on both common and preferred stock of record on that date.

The United States Rubber Co., New York City, declared a quarterly dividend of two per cent, payable July 31, on its first preferred stock of record July 15, 1919.

The van der Linde Rubber Co., Limited, Toronto, Ontario, has declared its regular semi-annual dividend of three and one-half per cent, payable August 1, 1919.

FINANCIAL NOTES.

The B. F. Goodrich Co., New York City, at a special meeting of its stockholders, held Thursday, June 26, 1919, authorized the increase of its capital stock from $84,600,000 to $109,600,000, the additional $25,000,000 to consist of 7 per cent cumulative preferred stock like the present issue of outstanding preferred stock. Of this new issue, $15,000,000, is to be offered pro rata to present stockholders, both common and preferred, at $102 per share, plus accrued dividends at 7 per cent, dating from July 1, 1919.

The Keystone Tire and Rubber Co., Inc., New York City, has authorized the issuance of additional common capital stock of the company to stockholders of record July 21, 1919, at $40 per share, in the ratio of one new share for each three shares already held. The company reports gross sales of $5,570,120 for six months ended June 30, 1919, against $3,000,672 for the same period in 1918 and $1,658,494 in 1917. Gross business for the first half of this year is almost equal to total sales of $6,172,291 of 1918. Before allowance for Federal taxes the net profits for the first six months of this year were $725,935, compared with $442,404 for the corresponding period in 1918 and $317,788 for 1917.

The recent offering of $1,000,000 Hood Rubber Co. preferred stock was oversubscribed by about 25 per cent. This stock was the remainder of the $5,000,000 preferred authorized in 1917, of which $4,000,000 was issued in that year. The additional $1,000,000 was recently offered to preferred stockholders at the rate of one share for every four held by them, and an opportunity was given the common stockholders to subscribe for any balance not taken by the preferred shareholders.

The New York Stock Exchange has admitted to dealings: Kelly Springfield Tire & Rubber Co. common and preferred rights and Keystone Tire & Rubber Co. rights.

The Fisk Rubber Co. of New York will redeem all of its outstanding first preferred and first preferred convertible stocks on the first day of August, 1919. Payment will be made upon said stocks at the office of the New England Trust Company, Boston, Massachusetts, at the rate of $120 a share for the first preferred stock and at the rate of $110 a share for the first preferred convertible stock.

There will be shortly offered $600,000 worth of 7 per cent preferred stock of the Needham Tire Co., a Massachusetts corporation, at $90 per share. This preferred stock is convertible into common stock at any time, par for par. The stock was offered to the public about the middle of July.

The Kelly-Springfield Tire Co., 15 Exchange Place, Jersey City, which was chartered in New Jersey in 1899, has filed a certificate at Trenton, New Jersey, showing that at a meeting of the majority of the stockholders of the concern it was decided to increase the capital stock from $12,900,000 to $20,900,000, of which $3,900,300 will be 39,003 shares of 6 per cent cumulative preferred stock, par value, $100; $7,000,000 in 70,000 shares of 8 per cent preferred stock, par value $100 and $10,000,000 in 400,000 shares of common stock, par value, $100.

The Hamilton Rubber Manufacturing Co., Trenton, New Jersey, has filed an amended certificate with the Secretary of State increasing its capital stock from $300,000 to $1,000,000. The increase was authorized at a meeting of the board of directors of the company held on July 9. George R. Cook is president and A. Boyd Cornell is secretary of the company.

THE REMEDY FOR PRICE-CUTTING.

In renewing its call upon Congress for the prompt passage of the Stephens Standard Price Bill, as amended, the Federal Trade Commission has shown a keen sense of the situation created by the Colgate decision of the Supreme Court.

The Colgate decision can be effective only in controlling retailers who buy directly from manufacturers. If a manufacturer sells to jobbers there is nothing to prevent the price-cutting retailer from securing goods through jobbers and continuing to snap his fingers at the manufacturer's standard price policy. The difficulties of manufacturers dealing exclusively with the jobbing trade are really increased by the decision because of the advantage which it gives to producers selling exclusively through retailers.

In offering to large manufacturers the tempting certainty of stabilizing their market by confining their distribution to retailers, the Colgate decision is a serious menace to every small manufacturer and wholesaler which can be removed only by remedial legislation such as the Stephens Bill which furnishes the machinery by which smaller manufacturers can secure the good will of distributors, wholesale and retail, and assure them a living profit.

FOR THE HEALTH OF THE WORKERS.

The Pennsylvania Rubber Co., Jeannette, Pennsylvania, takes particular interest in the welfare of its employes. Every worker after a year's service receives a $300 insurance policy, which after two years is advanced to $500, and automatically increases $100 a year until a maximum of $1,000 is reached.

An up-to-date hospital is maintained at the plant where registered nurses and a staff of physicians are subject to call

A UNIT OF THE PENNSYLVANIA RUBBER CO.'S HOSPITAL.

at all hours. There is an operating room, a first-aid room, a sterilizing room, and a ward with three beds. Any injury to a workman, however slight, must be attended to at the hospital, thus minimizing chances of infection or secondary complications.

The drinking water for the workers is filtered, sterilized, and then cooled and piped throughout the factory buildings.

TRADE NOTES.

The Republican Rubber Co., Kansas City, Missouri, a branch of the Republic Rubber Co., Youngstown, Ohio, has leased for ten years the two-story building at the corner of Nineteenth and McGee Streets, Kansas City. It is so constructed that additional stories can be added if necessary. This will be the district headquarters for the states of Nebraska, Kansas, Oklahoma and Western Missouri, including the sub-branch and territory at St. Louis. F. W. Osmun is district manager.

The BeSaw Tire & Rubber Co., Ardmore, Oklahoma, has sold its plant at Hartville, Ohio, to the Monarch Rubber Co. and will center its operations at Ardmore, where it expects to begin the manufacture of high-grade tires early in the fall. At a special meeting of its stockholders on June 16, 1919, the classification of the company's stock was changed from $500,000 to $900,000 common and from $500,000 to $100,000 preferred. The newly elected officers and directors are S. A. Apple, president; Charles von Weise, vice-president; Mark Kirkpatrick, secretary-treasurer; Edward Galt and Frank S. Gates, directors.

The Brunswick-Balke-Collender Co., Chicago, Illinois, is building an addition to its tire factory at Muskegon, Michigan, to be devoted exclusively to the manufacture of its "Brunswick" cord tires.

The Fort Wayne Tire & Rubber Manufacturing Co., Fort Wayne, Indiana, has completed its new factory and installed the power plant. It is now installing the necessary machinery and equipment for the manufacture of automobile and truck tires and expects to begin manufacturing early in August. The electrical equipment is being furnished by the General Electric Co., Schenectady, New York, and the tire-building machinery for both cord and fabric tires, all of which is motor-driven, by the Allen Machine Co., Erie, Pennsylvania, and the Williams Foundry & Machine Co., Akron, Ohio. The company will manufacture its tires under the trade-name "Wayne."

C. A. Braley and Albert Mebus, receivers of the Kansas City Tire & Rubber Corporation, Fourth and Central Streets, Kansas City, Missouri, announce that the company's plant at Chester, West Virginia, has been leased to the Cord Tire Co., which is now operating the same.

The International Toy Co., Eau Claire, Wisconsin, has contracted for the construction of one unit of its factory to be 60 by 200 feet. These units, three in all, will be of concrete substruction brick pilasters, four feet wide, and brick wall, four feet high, to windows, with steel sash for windows. The main building to be erected in front of these units will be crescent-shaped, to form a background for the children's playground which the company will feature as one of the attractions of the Northwest, supplying it with all kinds of amusement devices. The company, in addition to its rubber-tired express wagons for children, will manufacture kindergarten toys, coated with a preparation containing rubber which will injure neither the children nor their clothing.

The Akron Tire Co., Inc., Long Island City, New York, expects soon to build a larger factory and is constantly improving its machinery. It already has added to its real estate holdings until it now owns an entire block. This company, incorporated under the laws of the state of New York in 1911, for the purpose, among other things, of making rebuilt automobile tires by a special process invented and patented by George E. Batcheller, treasurer of the concern, in 1915 increased its capital from the original $5,000 to $300,000. It now employs 100 men. The officers are William H. Batcheller, president; George E. Batcheller, treasurer, and Minnie C. Batcheller, secretary.

The Ray Tire & Rubber Co., 833 Rees Street, Chicago, Illinois, manufacturer of the Ray puncture-proof interliner for tires, is contemplating constructing additional plants at Birmingham, Alabama; one in Los Angeles or San Francisco; and one in the East, to take care of increased business.

The Perfection Tire & Rubber Co., Fort Madison, Iowa, is building a three-story addition to its plant, 100 by 200 feet, to cost approximately $120,000. It is expected that it will be finished early in August.

The Triple Airless Tire Co., Manorville, Pennsylvania, expects to begin the operation of its new factory about August 1 for the manufacture of its specially designed tires. The officers of the company are A. M. Mateer, president; W. A. Iseman, vice-president, and A. C. Hileman, secretary-treasurer.

The Seamless Rubber Co., Inc., New Haven, Connecticut, is to build a new plant on the waterfront which will comprise a group of buildings covering an area 240 by 300 feet. There will be three five-story buildings, connected by one-story ones, and a large power house. It is expected that the plant will be completed by February, 1920, when the present one will be offered for sale.

The Gillette Rubber Co., Eau Claire, Wisconsin, is building a two-story brick and steel addition to its factory, which is nearly completed. The first floor will be devoted to the tire-building department and the second to repairing, fabric cutting and stock repairing.

The Syracuse Rubber Co., Inc., 301 Herald Building, Syracuse, New York, is building the first unit of its plant on its property on Thompson Road, East Syracuse. It will be of reinforced concrete, faced with brick, three stories high, with inside dimensions 60 by 200 feet. The incorporation of this company was noted in THE INDIA RUBBER WORLD June 1, 1919. The officers are E. R. Caldwell, president; Richard Byrne, vice-president; R. L. Caldwell, secretary; G. R. Loggie, treasurer and general manager; F. A. Shane and A. E. Wing, directors.

The Century Rubber Works, Chicago Illinois, has secured

property in Clearing, Illinois, on which it will build a new plant at an early date. Although the Century company has previously manufactured Ford tires exclusively, it intends to make other sizes in the new plant.

The Quaker City Rubber Co., Philadelphia, Pennsylvania, is building a two-story addition to its factory at Wissinoming, which will add about 41,000 square feet of floor space to its plant. The structure will be fireproof, of brick and concrete, and will be devoted entirely to the manufacture of tires. The cost, including machinery and equipment, will be about $250,000. In addition, the company intends to build a cord-tire treating structure, the location of which has not yet been decided upon. The new addition now being erected will include modern conveniences and appliances for the health, safety and general welfare of employes.

The Advance Rubber Co., 8th avenue, between 17th and 18th streets, Brooklyn, New York, is having plans approved by the Building Department for the erection of a building 200 by 130 feet, to cost probably in excess of $50,000. The company will build both cord and fabric tires. This concern was incorporated in 1912 and recently increased its capital from $150,000 to $1,000,000.

The business of Meyer & Brown, New York City, crude rubber brokers, has been transferred to Meyer & Brown, Inc., a New York incorporation noted in another column in this issue. The management and control will remain the same.

The Belden Manufacturing Co., 23d street and Western avenue, Chicago, Illinois, manufacturer of "Beldenite" rubber-insulated wires and cables, fiber and bakelite sheets, rods, tubing, etc., is planning to build a four-story brick and concrete building, 90 by 160 feet, on the Van Buren street side of its property in the block bounded by Van Buren, Congress and 47th streets and the Outer Belt Line, on which it intends eventually to consolidate its manufacturing business. It is operating two one-story concrete mill buildings, erected during the last three years. The new structure will be known as No. 8. J. C. Belden is president of the company.

The Arrow Grip Manufacturing Co., Inc., Glens Falls, New York, manufacturer of nonskid chains and lifting jacks, is completing a new factory of the Austin type, to cost approximately $100,000. It will be equipped with modern machinery. The company recently increased its capital stock from $100,000 to $500,000.

The Cutler-Hammer Manufacturing Co., Milwaukee, Wisconsin, manufacturer of electric controlling devices, has opened an office at 905 Kresge Building, Detroit, Michigan, which is practically a branch of its Chicago office. H. S. Kinsley is in charge, assisted by C. W. Greenman and M. Dugliss, all of whom were formerly in the Chicago office. Mr. Kinsley was formerly with the engineering department of the Milwaukee plant.

The Cutler-Hammer Manufacturing Co. has recently built a two-story addition to its factory at 12th street and St. Paul avenue, Milwaukee, Wisconsin, to be used for the manufacture of a new compensator intended to be used for starting squirrel-cage motors, for all commercial voltages.

The Parker Collapsible Rim Corporation has removed its offices to 605 Westminster Building, Chicago, Illinois. At the recent annual meeting the concern reorganized and elected a new board of directors. J. W. Hunt is president and W. H. Sickinger, general manager.

At a meeting of the directors of the Motor and Accessory Manufacturers' Association it was decided to postpone the usual midsummer convention until autumn, the date to be announced later.

E. O. Floyd has been appointed general sales manager of the Rossendale-Reddaway Belting & Hose Co., Newark, New Jersey, to take effect August 1, 1919.

Royer S. Hardy, crude rubber broker, 82 Beaver street, New York City, announces that he has formed with William MacArthur, formerly vice-president of J. T. Johnstone & Co., Inc., the partnership of Hardy & MacArthur, to deal in crude rubber and kindred products, and will open an Akron office at Central Savings & Trust building, Akron, Ohio.

The Keystone Tire & Rubber Co., Inc., New York City, now control 134 stores and expect to have 250 branches in operation by the first of the year. The cooperative store system originated with the Keystone company that operates a chain of stores extending from Maine to California and from Washington to Panama.

Smith-Serrell Co., Inc., maker of flexible and rigid shaft couplings, has changed its name to Smith and Serrell.

A DIRECTOR OF THE UNITED STATES RUBBER CO.

BY THE ELECTION of Frank A. Vanderlip to that body, the United States Rubber Co. has materially strengthened its already efficient board of directors. Mr. Vanderlip is too well known in financial and commercial circles to need any introduction, yet his entrance into the rubber industry makes it appropriate to record some facts regarding his wonderful career, rising from a country machine shop to become one of the highest financial authorities of the day.

FRANK A. VANDERLIP.

He was born in Aurora, Illinois, November 17, 1864, and after a commercial education, found work in a machine shop, meanwhile spending his evenings in mastering stenography. He then took a year's course at the University of Illinois, at Champaign, that state, specializing on finance and political economy. He joined the staff of the "Chicago Tribune," reporting financial affairs, supplementing his education by attending lectures at the University of Chicago. Later he was made financial editor of the "Tribune." He bought an interest in "The Economist," in 1894, serving as associate editor until 1897.

In that year Lyman J. Gage was appointed Secretary of the Treasury of the United States of America, and he took Mr. Vanderlip to Washington as his private secretary. Three months later the latter was appointed Assistant Secretary, in which position he showed his rare qualifications by organizing the Treasury forces for work on the loan needed by the Government to build up our Army and Navy for the Spanish war.

After four years in the United States Treasury, he resigned to become vice-president of the National City Bank of New York City, the largest institution of its kind in America. He was a delegate to the International Conference of Commerce and Industry at Ostend, Belgium, in 1902, and made an extended tour of Europe, studying financial and commercial conditions of Great Britain and the continental nations. In 1909 he succeeded to the presidency of the National City Bank, a position he resigned last June.

During the period when this country was at war Mr. Vanderlip devoted his entire energies to assist Secretary McAdoo in the Liberty Loan campaigns of that period. After the armistice he made another trip of observation to Europe. He is prominent in many financial and philanthropic organizations, has written many important articles and several books on financial subjects, and has delivered addresses before many prominent commercial associations. His home is at Scarborough-on-the-Hudson, New York.

A TEXAS TIRE MAN.

BORN IN SOUTHERN ILLINOIS in 1887, Cassell De Hibbs was reared on a farm until he was 17 years of age. His constant tinkering with the farming implements convinced his parents that he would make a better mechanic than farmer, and he was apprenticed to a carriage builder, who put him through a rigid course of training in forging, body making, top making, painting and upholstering, and he became an expert carriage maker.

CASSELL DE HIBBS.

About the time his apprenticeship was finished he decided to seek his fortune in Texas, and in 1907 he found employment in a carriage shop in Dublin of that state. Here he saw for the first time a motorcycle, and his inventive ingenuity being aroused, he secured a bicycle, and in a short time was touring the roads on his own motorcycle, his supply of gasoline in varnish cans strapped to the machine.

Forecasting the substitution of motor-propelled for horse-driven vehicles, he decided to interest himself with the coming important industry, and after about a year in Dublin, he proceeded to Fort Worth, Texas, and began to study rubber with the same thoroughness he had previously given to the carriage business.

His first experiments were repairing tires, and while so doing he invented, patented and manufactured various section molds, tube-repairing machines, and repairmen's tools that are in wide use to-ady. He then turned his attention to devising a way to manufacture automobile tires, using tires to work from that had been damaged beyond repair. He invented a machine to strip tires layer by layer, another machine to rebuild them, adjustable molds, and a process of curing that turns out a finished tire.

Mr. Hibbs' latest venture is the creation of an up-to-date plant for the manufacture of new tires, in which he will utilize several of his inventions.

PERSONAL MENTION.

At a meeting of the Board of Directors of the United States Rubber Co., New York City, held July 2, 1919, Frank A. Vanderlip, until recently president of the National City Bank, New York City, was elected a director of the rubber company in place of William S. Kies, resigned. Mr. Kies is vice-president of the American International Corporation and will devote his entire attention to its business in South America, from which he has just returned after five months' absence in that territory.

Paul Elbogen, formerly in charge of the Akron (Ohio) office of Fred Stern & Co., New York City, crude rubber importers, has been transferred to the New York office as manager.

J. C. Witwer, until recently assistant superintendent in charge of production of the International India Rubber Corporation, South Bend, Indiana, has been promoted to the position of factory manager.

Bartlett J. Smith has been appointed Eastern district manager for the International India Rubber Corporation, South Bend, Indiana, with headquarters in New York City.

R. B. Parker has been promoted from the position of assistant manager to that of branch manager of the Philadelphia (Pennsylvania) office of the Braender Rubber & Tire Co., Rutherford, New Jersey. He succeeds E. J. Smullen, who resigned to go into the automobile agency business in Chester, Pennsylvania.

F. I. Reynolds, formerly sales manager of pneumatic tires for the United States Tire Co., has joined the Keystone Tire & Rubber Co., Inc., New York City, as sales manager. Mr. Reynolds had been sales manager of the Diamond Rubber Co. previous to its absorption by the B. F. Goodrich Co. and was at one time connected with the Dupont Powder Co., Wilmington, Delaware.

NEW INCORPORATIONS.

Add-A-Tire & Supply Corp., July 12 (New York), $100,000. S. J. Ciactuch, C. Johnson, W. Miskowiak—all of Buffalo, New York. Principal office, Buffalo, New York. To manufacture auto tires and other accessories.

Ames Holden Tire Co., Ltd., May 26 (Canada), $3,000,000. T. H. Rieder, president; Hugo Wellein, treasurer; S. J. LeHuray, secretary. Principal office, 1221 Mount Royal avenue, East, Montreal, Canada. To manufacture automobile tires.

Arnold Rubber Co., The, June 4 (Ohio), $100,000. G. Hopkinson, president; H. W. Arnold, vice-president and general manager; C. W. Averell, secretary and treasurer; J. H. Smith, director and chief chemist—all of Akron, Ohio; H. Hopkinson, director and attorney, Boston, Massachusetts. Principal office, Ravenna, Ohio. To manufacture heels, soles, and molded goods.

Atex Tire & Rubber Co., Inc., July 15 (New York), $3,000. D. D. Deutsch, J. L. Diamond, S. Rabinowioz—all of 1789 Broadway, New York City. To manufacture tires, etc.

Ashland Tire & Rubber Co., May 15 (Ohio), $1,000,000. I. Fickel, president; G. C. Weyner, vice-president; A. A. Fickel, secretary and treasurer. Principal office, Union Building, Cleveland, Ohio. To manufacture inner tubes and other rubber products.

Better Wear Tire Co., June 30 (Delaware), $100,000. T. L. Croteau, P. B. Drew, H. W. Knox—all of Wilmington, Delaware. Delaware agent, Corporation Trust Co. of America, Du Pont Building, Wilmington, Delaware. To repair and manufacture tires and tubes.

Bolster Tire Sales Corp., June 30 (New York), $25,000. A. G. Bolster, J. A. Griffin, both of Syracuse; P. C. Wheeler, Cincinnatus—both in New York. Principal office, Syracuse, New York. To deal in auto tires, accessories, etc.

Collapsible Rim Corp., June 27 (Delaware), $150,000. S. W. Dill, P. B. Drew, H. E. Knox—all of Wilmington, Delaware. Delaware agent, Corporation Trust Co. of America, Du Pont Building, Wilmington, Delaware. To manufacture and deal in collapsible automobile wheel rims and all accessories.

Cooperative Vulcanizing Co., Inc., The, May 2 (Ohio), $5,000. C. C. Clem, president and manager; V. B. DuVall, vice-president; E. W. Mink, secretary and treasurer; J. W. Clem and J. M. Saum, directors—all of Dayton, Ohio. Principal office, 12 Warren street, Dayton, Ohio. To buy and sell automobile tires and accessories.

Delton Manufactring Co., July 7 (Delaware), $100,000. T. L. Croteau, H. E. Knox, S. E. Dill—all of Wilmington, Delaware. Delaware agent, Corporation Trust Co. of America, Du Pont Building, Wilmington, Delaware. To deal in manufactured products made from gums, rubber, etc.

Dreyfus Tire Works, Inc., June 24 (New York), $1,000. W. Auerbach, 252 Greene avenue; C. Auerbach, 976 Bushwick avenue, both of Brooklyn; B. Auerbach, 699 Jackson avenue, Bronx—both in New York. Principal office, Brooklyn, New York. To deal in tires and supplies.

Duplex Cushion Tire Co., May 31 (California), $1,000,000. B. F. and W. A. Coons, F. O. Meyers, G. H. Woodruff. Principal office, 620 Merchants National Bank Building, Los Angeles, California. To deal in automobile supplies and rubber goods.

Essenkay Co. of Detroit, Inc., May 12 (Michigan), $10,000. J. C. Reeves, president, 50 Watson street; W. B. Townsend, vice-president, 271 Merrick avenue; N. C. Reeves, secretary and treasurer, 50 Watson street—all of Detroit, Michigan. Principal office 872 Woodward avenue, Detroit, Michigan. To promote sale of "Essenkay" tire filler.

Faber, Inc., A. W., July 5 (New Jersey), $150,000. A. Macmillan, 411 Passaic avenue; S. Kaufman, 334 Belmont avenue; J. T. Elliot, 801 Mount Prospect avenue—all of Newark, New Jersey. Principal office, 41 Dickerson street, Newark, New Jersey. Agent in charge, R. J. Metzler. To buy, produce, sell and deal in all kinds of rubber.

Gambles' Tire Co., Inc., July 22 (New York), $5,000. S. Rabinowitz, I. Jacobs, S. Bernheim—all of 1765 Broadway, New York City. To manufacture tires.

Gold Medal Tire and Rubber Co., April 23 (Oklahoma), $10,000. A. B. and M. Unger and M. R. Cohen—all of Muskogee, Oklahoma. Principal office, Muskogee, Oklahoma. To manufacture, buy, and sell tires for automobiles, etc.

Heilman Co., Frederick, March 25 (Delaware), $100,000. L. E. O'Brien, Crystal Annex; H. G. O'Hara, 29 Sell street; L. O. Shipp, Main street—all of Johnstown, Pennsylvania. Principal office—Johnstown, Pennsylvania. To manufacture and sell "Man-Heil" automatic inhalers.

Heisey Tire and Rubber Co., The, April 15 (Ohio), $50,000. C. F. Hake, Jr., president; W. J. Howard, vice-president; H. C. Heisey, secretary and general manager; H. A. Lackman, treasurer; L. A. Kries, director—all of Cincinnati, Ohio. Principal office, Eighth avenue and Broadway, Cincinnati, Ohio. To buy, sell, and deal in rubber tires and tubes.

Hill Bros. Co., June 12 (Massachusetts), $80,000. L. T. Hill, president, Hudson; G. A. Hill, vice-president, 1391 Commonwealth avenue, Boston; C. B. Hill, secretary and treasurer, Hudson—both in Massachusetts. Principal office, 120 Central street, Hudson, Massachusetos. To manufacture men's medium grade welt shoes.

Illinois Savoid Tire Co., July 9 (Delaware), $2,000,000. T. L. Croteau, P. B. Drew, H. E. Knox—all of Wilmington, Delaware. Delaware agent, Corporation Trust Co. of America, Du Pont Building, Wilmington, Delaware. To rebuild and repair tires of all kinds.

Jacobs Tire & Rubber Corp., June 25 (Delaware), $1,000,000. P. B. Drew, H. E. Knox, S. E. Dill—all of Wilmington, Delaware. Delaware

agent, Corporation Trust Co. of America, Du Pont Building, Wilmington, Delaware. To manufacture, buy, sell, and deal in rubber.

Jones Never Loosen Rubber Heel Corp., July 3 (Delaware), $200,000. J. J. Jones, 368 West 29th street; J. R. Walker, C. T. Hesser, both of 116 West 39th street—all of New York City. Delaware agent, United Staoes Corporation Co., Dover, Delaware. To manufacture, sell, and deal in rubber heels, etc.

Logan Tire Co. of America, Inc., July 8 (Delaware), $500,000. F. R. Hansell, Philadelphia, Pennsylvania; E. M. MacFarland, J. V. Pimm, both of Camden, New Jersey. Delaware agent, Corporation Guarantee & Trust Co., 927 Land Title Building, Philadelphia, Pennsylvania. To manufacture, buy, and deal in rubber tires and rubber goods.

MacMichael Co., Inc., The L. P., June 26 (New York), $60,000. L. P. MacMichael, 225 West 86th street, L. G. Haas, W. P. Muller, both of 2 Rector street—all of New York City. To manufacture rubber products.

Mercer Tire Corp., July 14 (New York), $10,000. T. H. Montgomery, president; F. C. Doehler, vice-president; J. W. Mercer, secretary; R. C. Danan, treasurer. Principal office, 754 Seventh avenue, New York City. To manufacture tires.

Meyer & Brown, Inc., July 1 (New York), $1,500,000. O. Meyer, Hartsdale; A. H. Brown, New Rochelle; S. M. Stroock, 19 West 76th street, New York City—all in New York. To manufacture rubber products.

Michigan Savold Tire Co., June 24 (Delaware), $2,000,000. S. E. Dill, P. B. Drew, H. E. Knox—all of Wilmington, Delaware. Delaware agent, Corporation Trust Co. of America, Du Pont Building, Wilmington, Delaware. To rebuild, manufacture, and deal in tires of all kinds.

Missouri Savold Tire Co., June 24 (Delaware), $2,000,000. S. E. Dill, P. B. Drew, H. E. Knox—all of Wilmington, Delaware. Delaware agent, Corporation Trust Co. of America, Du Pont Building, Wilmington, Delaware. To manufacture and deal in tires of all kinds.

Mount Royal Rubber Co., Ltd., May 23 (Canada), $500,000. T. H. Rieder, D. L. McGibbon, S. J. LeHuray, C. H. Ancrum, W. E. Coughtry—all of Montreal, Canada. Principal office, Montreal, Canada. To manufacture and deal in rubber goods.

Noccem Rubber Corp., July 7 (New York), $125,000. S. M. Lazarus, 106 Haven avenue; A. I. Menin, 3 West 103rd street, both of New York City; A. M. Burnham, 990 Bushwick avenue, Brooklyn, New York. To manufacture rubber.

North Western Tire Corp., July 15 (New York), $25,000. J. Jacobs, S. Bernheim, W. Loewenthal—all of 1877 Broadway, New York City. To manufacture tires.

Northern Rubber Co., Ltd., The, January 14 (Canada), $500,000. F. E. Fartridge, president, A. F. Dwyer, secretary. Principal office, corner of Alice and Metcalf streets, Guelph, Ontario, Canada. To manufacture rubber footwear.

Oklahoma Tire & Rubber Manufacturing Co., June 3 (Oklahoma), $1,000,000. E. L. Jones, R. Rogers, E. J. Baxter—all of Tulsa, Oklahoma. Principal office, Tulsa, Oklahoma. To deal in rubber, etc.

Penn-Ohio Tire Distributor Co., The, May 20 (Ohio), $10,000. A. F. Butterfield, president; H. F. Toedtman and C. S. Goby, vice-presidents; R. C. Beatty, secretary; A. W. Gillespie, treasurer; C. S. Goby, director—all of Cleveland, Ohio. Principal office, 6523 Euclid avenue, Cleveland, Ohio. To distribute Braender tires.

Perfect Rubber Co., The, June 19 (Ohio), $100,000. C. H. Voegele, president; E. O. Townsend, vice-president; J. M. Pittney, secretary and general manager; F. M. Bushnell, treasurer; J. S. Heil, general sales manager; L. C. Chase and A. C. Moore, directors. Principal office, Mansfield, Ohio. To manufacture rubber toys, hot-water bags, etc.

Perfection Tire & Supply Co., Inc., February 4 (Illinois), $10,000. C. E. Peterson, president; F. E. Anderson, vice-president; L. V. Anderson, secretary and treasurer; E. L. Pettit, sales manager. Principal office, 1309 Fifth avenue, Moline, Illinois. To deal in tires, tubes and auto supplies.

Provo Tire Co., Inc., July 7 (New York), $4,000. R., J., and N. Provo—all of Syracuse, New York. Principal office, Syracuse, New York. To manufacture tires.

Queensboro Tire Co., Inc., July 9 (New York), $50,000. C. G. Stone, 447 Second avenue, Mount Vernon; J. J. Furia, 1002 Grant avenue, New York City; J. J. Tanzola, 162 Eighth street, Brooklyn—all in New York. To deal in tires.

Rambler Rubber Co., Inc., July 17 (New York), $500. E. R. Dodge, D. Michelson, H. Spingarn—all of 61 Broadway, New York City. To manufacture tires.

Royal Webbing Co., Inc., July 7 (New York), $15,000. H. Kropf, 1428 Park avenue, M. Kropf, 844 Whitlock avenue, both of New York City, M. Karger, 70 South 51st street, Corona, Long Island—both in New York. To manufacture elastic goods, etc.

Rubber Limb Co. of New York, Inc., The, July 17 (New York), $5,000. I. H. and J. Rosenberg, both of 42 West 72nd street; L. J. Frey, 125 West 93rd street—all of New York City. To manufacture rubber limbs.

Rubber Products & Machinery Co., March 6 (California), $75,000. J. C. Stockwell president; A. T. Sackett, vice-president; C. G. Sackett, secretary. Principal office, 225 East Ninth street, Los Angeles, California. To manufacture tire repair materials, machinery, tools, equipment, etc.

Rubber Products Corp., June 12 (Delaware), $500,000. G. H. Dowsey, president, 60 Wall street; E. Parson, vice-president, 66 Broadway; L. E. Wears, 60 Wall street—all of New York City. Principal office, 60 Wall street, New York City. To manufacture inner tubes and mechanical rubber goods.

Security Signal Sales Corp., July 7 (Delaware), $100,000. E. F. Edelbrock, J. F. Malloy, M. M. Lucey—all of Wilmington, Delaware. Delaware agent, J. F. Malloy, 927 Market street, Wilmington, Delaware. To purchase, sell, and dispose of automobile articles and accessories.

Snap-On Tread & Tire Co., Inc., July 3 (Delaware), $1,000,000. C. A. Cole, Hackensack; R. A. Van Voorhis, 205 Union street, Jersey City; A. R. Oakley, Pearl River—all in New Jersey. Delaware agent, Registrar & Transfer Co., 900 Market street, Wilmington, Delaware. To manufacture, buy, sell and deal in tires.

Standard Rubber Co., Inc., June 30 (New Jersey), $125,000. F. A. and B. Elshoff, 68 Gates avenue, Montclair; C. H. Morrell, 978 Broad soreet, Newark—both in New Jersey. Pricipal office, 460 Bloomfield avenue, Montclair, New Jersey. Agent in charge, J. A. Hines. To buy, manufacture, sell and deal in all kinds of rubber.

Steinbilt Tire Co., Inc., July 11 (New York), $25,000. E. and N. Stein, both of 36 Edgerton street; M. G. Ellenbogen, 19 Berkshire street—all of Rochester, New York. Principal office, Rochester, New York. To manufacture tires.

Tinsley's Economy Tire Co., Inc., June 26 (New York), $10,000. J. Jacobs, S. Bernheim, W. Loewenthal—all of 1877 Broadway, New York City. To manufacture tires.

Tire Life Co., Inc., July 7 (New York), $100,000. A. H. Higgins, 61 Broadway, New York City; R. B. Martin and F. Roffe, both of Kelly Building, Long Island City, New York. To manufacture tires, etc.

Tire Sales Co., July 8 (Delaware), $100,000. F. R. Hansell, Philadelphia, Pennsylvania; E. M. MacFarland, J. V. Pimm, both of Camden, New Jersey. Delaware agent, Corporation Guarantee & Trust Co., 927 Land Title Building, Philadelphia, Pennsylvania. To manufacture, buy, sell, and deal in rubber tires and rubber goods.

Triplex Tire Corp., July 10 (New York), $260,000. J. and G. Martin, both of 105 West 52nd street; J. E. Ankus, 299 Broadway—all of New York City. To manufacture tires.

United States Rubber & Land Co., June 27 (Delaware), $1,000,000. M. L. Rogers, L. A. Irwin, W. G. Singer—all of Wilmington, Delaware. Delaware agent, Delaware Registration Trust Co., 900 Market street, Wilmington, Delaware. To plant, cultivate, and grow rubber trees, and to manufacture and deal in rubber and the by-products thereof.

Zenith Tire & Rubber Co., July 7 (Delaware), $10,000,000. E. E. McCloud, 722 Citizens Building; M. R. Jordan, Society for Savings Building; J. L. Francis, 719 Citizens Building—all of Cleveland, Ohio. Delaware agent, Colonial Charter Co., 927 Market street, Wilmington, Delaware. To manufacture and deal in tires of all kinds.

INCORPORATION NOTES.

The Kelley Tire & Rubber Co., 962 Chapel street, Connecticut, which was incorporated under the laws of Delaware on February 7, 1919, is capitalized at $1,000,000, to market pneumatic tires and inner tubes. The officers are Edward J. Kelley, president; Charles H. Bortell, Jr., vice-president and treasurer, and Harry F. Gilg, director.

The Simplicity Wheel Co., Grand Rapids, Michigan, was incorporated under the laws of Michigan in February, 1917, to sell "Simplicity" demountable wheel attachments. The incorporators and officers are F. B. Raymond, president; F. W. French, vice-president; George Clapperton, secretary and treasurer; Elmer H. Grey and Dr. Louis Barth.

The Armstrong Tire & Vulcanizing Co., 1336 Michigan avenue, Chicago, Illinois, was incorporated by M. Klienmann and others at $20,000, on December 28, 1918, to manufacture, buy, sell, build and repair automobile tires, tubes, etc., and acquire patents, etc.

The Independent Airless Tire Co., Independence, Missouri, was incorporated at $75,000 on October 2, 1918, to manufacture automobile tires. It has built a stone structure 75 by 100 feet, with full basement, on the Missouri Pacific Railroad, with switch-spur, and is completing the installation of machinery. It expects to start manufacturing as soon as this is finished. The officers are J. E. Bridges, president; Eben Miller, vice-president; E. C. Harrington, secretary, and W. C. Bridges, treasurer.

MICHELIN EMPLOYES INSURED IN CELEBRATION OF PEACE.

In recognition of their loyalty, and in celebration of the signing of peace, the employes of the Michelin Tire Co., Milltown, New Jersey, have each received, without cost or physical examination, a paid-up insurance policy covering their lives for varying sums, depending on their years of service with the company. Hereafter every new employe will be insured upon the completion of his first six months of continuous service. The amounts range from $200 for six months' employment to $1,200 for ten years and over.

In announcing this liberal policy, J. Hauvette-Michelin, vice-president of the company, mentions with pride the faithful work of Michelin operatives on war orders for tires and gas-masks, and of their patriotic support in the various Liberty Loan, Red Cross and other war drives.

The world-wide Michelin organization of which the American company is a part, also has reason to be proud of its contribution to the Allied armies in the great war. Collectively the various Michelin companies gave 3,333 men, 511 of whom lost their lives. No less than 690 Michelin employes received decorations during the war, twelve officers out of this number having been made "Chevaliers de la Légion d'Honneur," while twenty-nine received the military medal.

CANADIAN NOTES.

The Ames Holden Tire Co., Limited, 1221 Mount Royal Avenue East, Montreal, Quebec, has been incorporated by letters patent of the Dominion of Canada to manufacture automobile tires. The authorized capital is $3,000,000, of which $2,000,000 has been issued and fully paid up. The company will build its plant at Kitchener, Ontario. The officers are Talmon H. Rieder, president; Hugo Wellein, treasurer, and S. J. LeHuray, secretary. The directors include the above and D. Lorne McGibbon, Sir Herbert Ames, Major L. L. Anthes, Walter T. Barrie, J. C. Breithaupt, Hon. Nathaniel Curry, Hon. C. P. Beaubien, K. C.; William Mulock, Jr., Hon. Wallace Nesbitt, K. C., and Thomas H. Lane.

The Goodyear Tire & Rubber Co. of Canada, Limited, Toronto, Ontario, has under construction two additions to its pneumatic tire plant, one 100 by 100 feet and the other 60 by 120 feet, both four stories and basement. In addition, a large warehouse is being built in Regina, Saskatchewan, on which work has just been begun. It is expected that all these buildings will be completed before the first of the year.

The K. & S. Canadian Tire & Rubber Co., Limited, Toronto, Ontario, manufacturer of molded rubber sundries, intends to double the capacity of its plant and add dipped goods to the lines now being manufactured. A new building will be put up for the purpose. In addition, the company will erect a tire plant, 80 by 185 feet, three stories high, of fireproof construction. Both buildings will be on the company's property at Weston, Ontario, and machinery for equipping them will be purchased later. The tire plant is planned for a capacity of 1,000 tires and 2,000 tubes daily.

OAK TIRE & RUBBER CO. ENLARGEMENT.

The Oak Tire & Rubber Co., Toronto, Ontario, will considersiderably increase its output by the addition of new machinery. In the spring it was turning out 1,200 inner tubes and 150 casings daily, but by this addition will have a capacity of 250 casings. The success of the enterprise, now only about 20 months old, is due chiefly to the energy of Frank D. Law, the managing director, who in nine months organized the company, secured the capital (in war times, be it observed) of $400,000, purchased and installed the machinery and started production, closing the first first year with a net profit of over $32,000.

Frank D. Law

The factory is under the supervision of Walter Smith, formerly of Gutta Percha & Rubber, Ltd., Toronto, Canada. Walter Seward, of the Dreadnaught Tire & Rubber Co., Baltimore, Maryland, is a director and as consulting superintendent visits the factory at Oakville each month.

A CANADIAN INDUSTRIAL MUSEUM.

Connected with Laval University, Montreal, Canada, is a Faculty of Commerce, and as an annex to this is the Commercial and Industrial Museum of Montreal which has for its object imparting to Canadian merchants and manufacturers information for the advancement of their business. The museum is housed in an imposing building in which samples will be displayed of all the natural and manufactured products of the world, and as far as possible, exhibits showing the different stages of manufacture, modes of packing, etc., with labels giving explanatory information.

Commercial information concerning Canadian and foreign markets is afforded exhibitors who will also have access to the commercial library. Exhibits are solicited from rubber manufacturers, both Canadian and foreign, for this permanent industrial exposition, which is open to all visitors free of charge.

RUBBER GROWING TO BE SHOWN IN MOTION PICTURES.

A motion picture chronicle embracing all the details of the growing and harvesting of rubber in Sumatra will be the object of an expedition to be started soon by Harry Levey, manager of the Industrial Department of the Universal Film Manufacturing Co., New York City, under the auspices of one of the largest manufacturers of rubber products in the world.

When completed this series of pictures will stand as the first and only visualized and comprehensive survey of this end of the rubber industry in existence. The film will be given a nation-wide distribution as an educational feature.

THE LESSON OF THE DIRIGIBLE DISASTER.

The terrible accident to the Goodyear dirigible balloon in Chicago, resulting from the fall of the whole blazing machine into a bank building and the explosion of the fuel tank, the whole catastrophe causing 12 deaths, grimly emphasizes as nothing before has done the need of strict government supervision of aircraft and air transportation of all kinds. Complete and unvarying safety has not yet been attained for any kind of travel, but the hazards of aerial travel are the greatest known and all reasonable means should be taken to minimize them, and especially to safeguard the public on the ground below. Nothing should ever be done to hamper or discourage the fullest development of the science of aerial navigation, for its value in many directions has been fully demonstrated, but the right kind of regulations need not do that.

Already air pilots of every sort must be licensed, and thinking persons agree that comprehensive Federal laws governing flying of all kinds are essential to the common good. Reasonable laws would provide for intelligent supervision of both the persons and vehicles engaged in aerial navigation; would prohibit flights over cities and prescribe flight altitudes over less populous districts; would provide landing places for both airplanes and dirigibles on the outskirts of large cities; and would prohibit the use of aircraft for circus purposes to give thrills to the public.

There is also another point worthy of consideration. Strict navigation laws prevent anarchy on the seas, and the time is coming when similar laws will be needed to prevent it in the air.

NEW JERSEY SAVOLD TIRE CO.

The New Jersey Savold Tire Co. has been formed to operate in New Jersey under the Savold process for rebuilding used automobile tires. L. R. Best is president; A. J. Davis, vice-president, and R. K. Underhill, secretary and treasurer.. The New Jersey plant is located at 235-249 Elizabeth street, Newark, and has a daily capacity of 400 tires. The company is capitalized at $2,000,000, par value $20 per share, under New Jersey laws. Other Savold stations will be established in Atlantic City, Trenton, Camden, Jersey City and other cities and the company will eventually have a daily capacity of 1,000 tires.

OLD DENTAL RUBBER FOR IMITATION CORAL.

New methods of salvaging and utilizing rubber scrap of every kind are frequently coming to light, some on a large scale, others of more interest than moment. As an instance of the latter sort, a young man is working his way across the country and making a neat living besides by buying discarded false teeth from house to house. This itinerant buyer sorts out the platinum pins—the chief prize—to be resold for platinum. Any gold or silver is next broken off, the false teeth being shattered to release it. The plate itself, or dental gum, which remains is sold as quantity warrants to the makers of imitation coral.

THE RUBBER TRADE IN OHIO.

By Our Regular Correspondent.

AKRON NOTES.

IN THE COURSE OF THE RECENT PROCEEDINGS BEFORE THE INTERSTATE Commerce Commission relative to revision of the crude rubber freight classification ratings, it was asserted that 30,000 different articles made of rubber are now produced in the city of Akron, representing in value more than 40 per cent of the annual production of rubber articles in this country and requiring in their manufacture one-fourth of the world's supply of crude rubber and one-half of the amount imported by the United States. In that city alone nearly 70 per cent of the automobile tires made in the United States are produced. Over 60,000 persons are employed in the rubber factories of northeastern Ohio, and because of their rapid expansion the population of Akron, for example, has increased from 70,000 in 1910, to 158,000; Canton from 50,000 to 75,000; and Youngstown from 80,000 to 120,000.

* * *

C. E. Cook, for many years a member of The B. F. Goodrich Rubber Co. organization, first at Akron, Ohio, with the mechanical goods department, and later as Pacific Coast manager, with headquarters at San Francisco, and for the last two years located at Akron, Ohio, in connection with branch operating work, has been made sales manager of mechanical goods, for that company.

C. E. COOK.

His long and varied experience with the Goodrich organization fits him for the larger responsibilities his new position entails, and he is receiving the congratulations of his friends in the trade.

* * *

The employes of The B. F. Goodrich Co. are to have an athletic field at Liberty Park. The announcement was made by A. B. Jones, second vice-president and director of plant administration, at the victory dinner in honor of the Goodrich track team, thrice winner of Akron's industrial athletic meet.

What is said to be the largest swimming pool in the world is being built at Summit Beach Park, Akron. It is 80 by 100 feet, and from 30 inches to 11 feet deep, with four diving boards and a 20-foot steel tower. John R. Gammeter, inventor of rubber machinery, is president of the Akron Natatorium Co., owner of the pool.

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The Mohawk Rubber Co., Akron, is completing its new factory addition, in the form of a new wing to house portions of the cord-tire building and curing departments. The company has just opened a new branch at Dallas, Texas.

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Teams of girls from Goodrich, Firestone, Miller, and Goodyear are planning to organize baseball nines for a fall series, to contest for the city title. Goodrich and Goodyear each have two teams practicing.

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The General Tire & Rubber Co., Akron, has added what it claims to be the most effective vulcanizing department in the tire industry. Instead of the usual "pit," with the vulcanizers sunk in the ground, the vulcanizers extend from the first floor to the ceiling—20 feet—and their tops are accessible from the second floor, where the men can work in a temperature no higher than in other parts of the factory. This floor is well ventilated, the story being 24 feet high in the clear. Twenty-one vulcanizers will be installed, having a capacity of 3,000 tires per day. A traveling crane, electrically propelled and operated, will handle all molds and cores.

This company's new three-story plant extension will be used for tube and curing rooms. It is built of concrete and is said to have cost $150,000.

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John B. Tuttle, until recently research chemist for the Firestone Tire & Rubber Co., Akron, has been appointed chief chemist of Plant No. 2. He is succeeded by Norman A. Shepard.

A. Huetter, founder of the Premier Rubber & Insulation Co., Dayton, Ohio, has resigned his position as vice-president and general manager and disposed of his holdings in that concern to accept a position in the industrial engineering department of the Firestone Tire & Rubber Co., Akron.

Boxing and wrestling smokers will start at Firestone after Labor Day, at least three being planned for the season. An athletic carnival for both men and women will also be held during the fall and winter season.

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The Phoenix Rubber Co., Akron, at its recent stockholders' annual meeting, elected the same directors and officers, but added to its board of directors Joseph Dangel, superintendent of the American Hard Rubber Co., and Morris E. Mason, secretary of the Mohawk Rubber Co.

The company plans to spend over $250,000 in new buildings to be built at an early date, for the manufacture of tires and mechanical rubber goods of all kinds. E. C. Deibel is president; Theodore Krumeich, vice-president; E. F. Krumeich, treasurer; S. G. Rigdon, secretary and general manager, and J. G. Bretson, factory superintendent.

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H. H. McCloskey has been made second assistant treasurer of The Goodyear Tire & Rubber Co., Akron. He has been with the company since 1902, during which time he has been cashier since 1910.

The Goodyear Tire & Rubber Co., Akron, operates four busses equipped with pneumatic cord tires, between the factory and Goodyear Heights, its employes' community. In one month 125,000 passengers were carried. The fare is 3½ cents. Two additional busses are to be put on the route.

The Goodyear Tire & Rubber Co., Akron, has met the problem of instructing salesmen on the road by sending to them week-end traveling sales schools. Class-room work covers policy, product and salesmanship, with reference to tires, accessories and mechanical goods. The company publishes, among other house-organs, "The Triangle," intended for the salesmen only and held confidential by them.

CLEVELAND NOTES.

The district sales managers of The McGraw Tire & Rubber Co., Cleveland, Ohio, held an important meeting at the home office in that city June 20 to 23, at which plans were formulated covering the immediate broadening of the field of distribution of this company's products. The McGraw company recently increased its guarantee on fabric tires from 5,000 to 6,000 miles and also established an 8,000-mile guarantee on cord tires and 10,000 miles on their "Standard Profile" and "HiTread" truck tires, and much new business is anticipated.

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The Ideal Tire & Rubber Co., Cleveland, is having plans drawn for the first additions to its factory, to take care of increased business.

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The D. & M. Cord Tire Co., Cleveland, will build a three-story factory unit of the E-shaped type, 80 by 225 feet, of reinforced concrete and brick, on the property which it secured from the Board of Trade of Warren, Ohio. It is expected that construction will begin late in August and that the factory will be ready for operation in December. Walter E. Myers is president and Walter R. Denman, secretary and general manager.

Kent E. Lyman has sold The Aetna Rubber Co., Cleveland, to a syndicate, which has increased the capital stock to $150,000 and will continue the business under the same name. In addition to electricians' and acid gloves, a line of hard and soft molded rubber goods will be added.

* * *

The McElrath Tire & Rubber Co., Cleveland, formerly the McElrath Truck Tire Co., has increased its capital from $15,000 to $515,000 and will build and equip a factory near Cleveland for the manufacture of cord and solid tires, specializing in truck and Ford sizes. R. P. McElrath is president of the company and the headquarters are in Cleveland.

* * *

The A. G. Watt Co., Park Building, Cleveland, has been appointed mid-western representatives and sales agents for Hummel & Robinson, New York City, manufacturers and importers of chemicals and dry colors for the paint, varnish and rubber trades. Mr. Watt was formerly connected with E. M. & F. Waldo, New York City.

The A. G. Watt Co. has also been appointed sole selling agents for Cleveland, Detroit and vicinity for the products of J. S. & W. R. Eakins, color manufacturers, Brooklyn, New York.

MISCELLANEOUS OHIO NOTES.

The Mason Tire & Rubber Co., Kent, Ohio, in competition with other rubber companies, has been awarded the contract for the supply of all kinds of tires for government mail-trucks, etc., from July 1 to December 31, 1919.

Work will begin August 1, 1919, on the factory additions of the Mason Tire & Rubber Co., which are to be devoted to solid-tire construction.

F. E. Schmeidel, paymaster of The Mason Tire & Rubber Co., Kent, Ohio, is candidate for Mayor of that city, heading the ticket of the Republican Club, of which he is president.

The Mason band made its first public appearance July 4, 1919, when it furnished the music for the celebration at Uniontown, Ohio.

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The McNaull Tire Co., Toledo, Ohio, has removed its sales and executive offices from the Ohio Building to 1023 Nicholas Building.

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The McLean Tire & Rubber Co., East Liverpool, Ohio, has completed a one-story warehouse, 40 by 100 feet, which will enable it to increase its production considerably.

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The Faultless Rubber Co., Ashland, Ohio, has awarded the contract for another extension to its plant, to be used in the manufacture of hard rubber, sponges and balls.

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The Ashland Tire Co. has been organized at Ashland, Ohio, by Jacob Fickel, president; J. C. Weyher, secretary, and A. A. Fickel, Cleveland, treasurer. A plant will be constructed within a few months on a tract of land of considerable size, and plans are already being drawn.

* * *

J. C. Heifner, Ashland, Ohio, has opened a factory for the manufacture of storage and galvanized dipping tanks, cooling tanks, cement cans, etc., for the rubber trade. The building is 50 by 80 feet, three stories high and is being equipped with modern machinery, which will permit the making of equipment to specifications.

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The Erie Tire & Rubber Co., Sandusky, Ohio, has awarded a contract for a heater-room building, and will build further additions at an early date.

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The Arnold Rubber Co., Ravenna, Ohio, recently incorporated for the manufacture of heels, soles and molded goods, has elected the following officers: George Hopkinson, president; C. W. Arnold, secretary and treasurer; H. W. Arnold, vice-president and managing director. J. H. Smith is a director and chief chemist. All are Akron men.

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The Heisey Tire and Rubber Co., southeast corner of Eighth avenue and Broadway, Cincinnati, Ohio, has taken over the agency for the Oldfield tire in that district and will handle Oldfield products exclusively. Charles F. Hake, Jr., is president. The company is a new incorporation.

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The Central Rubber Co., Inc., Defiance, Ohio, is installing additional machinery for the manufacture of reclaimed rubber. It is also equipped to handle all grades of scrap rubber.

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The Columbus Climax Rubber Co., 417 Citizens Bank Building, Columbus, Ohio, is operating its factory at Huntington, West Virginia, manufacturing standard inner tubes.

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The Perfect Rubber Co. has purchased a site for a rubber factory at Mansfield, Ohio, for the manufacture of rubber toys, hot-water bags and bottles, balls, druggists' sundries, etc. The company was incorporated June 19, 1919, for $100,000 fully paid up. The officers are: C. H. Voegele, president; E. O. Townsend, vice-president; J. M. Pittney, secretary and general manager; F. M. Bushnell, treasurer, and J. S. Heil, general sales manager. The above are also directors, besides L. C. Chase and A. C. Moore. Mr. Pittney was formerly efficiency engineer for the Faultless Rubber Co.

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The Hydraulic Press Manufacturing Co., Mount Gilead, Ohio, is constructing an up-to-date foundry building and installing equipment. It also plans to double its office and engineering department space.

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The Monarch Rubber Co., Canton, Ohio, has begun work on its new factory, to be built at Hartville, Ohio.

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The Rubber Products Co., Barbertown, Ohio, makers of "Stronghold" tires and tubes, have announced a new manufacturing program which will double their output within 30 to 60 days.

THE GOODRICH CHIEF CHEMIST.

GEORGE OENSLAGER began his professional career as chemist of the paper mills of the well-known firm of S. D. Warren & Co., at Westbrook, Maine. After ten years in the paper industry he became chemist of the Diamond Rubber Co. at Akron, Ohio. When the Diamond was taken over by the Goodrich company Mr. Oenslager was appointed chief chemist of The B. F. Goodrich Co., which important position he still fills.

GEORGE OENSLAGER.

Mr. Oenslager is a native of Harrisburg, Pennsylvania, and was born September 25, 1873, graduating at Harvard University in 1894.

In addition to being director of chemical laboratories of The B. F. Goodrich Co., Mr. Oenslager is a member of the Operating Committee of the plant. He is also an active member of the American Chemical Society and the American Institute of Chemical Engineers.

THE RUBBER TRADE IN MASSACHUSETTS.

By Our Regular Correspondent.

THE BOSTON SHOE STYLE SHOW, held in this city four days in the middle of July, was in every way superior to its predecessors. It occurred in Symphony Hall, which was arranged for the occasion by the erection of booths for the various exhibits, a silver screen for motion pictures, and a runway down the middle of the hall, along which promenaded the thirty or more young ladies of more than ordinary pulchritude, who wore stunning, up-to-date costumes, with appropriate footwear. At the end of the runway was a revolving pedestal, on which each model, in graceful pose, was exhibited, thus giving ample opportunity for observation of the costumes and footwear.

The only rubber exhibits were those of the Foster Rubber Co., Boston, maker of the Cat's Paw rubber heels and soles, and the Cambridge Rubber Co., which has recently added to its products a line of rubber-soled footwear.

Orchestral music and organ recitals were given, and motion pictures showed the progress of shoe manufacture from the primitive sandal down to the latest product of the twentieth-century shoe factory. A number of ladies competed for a prize for the most nearly perfect foot, based on the measurements of the foot of the Venus of Milo.

The show was well attended, and at each of its evening sessions some prominent speaker made a short address. Each day it was in charge of a different organization, namely, manufacturers, travelers, merchants and tanners. Shoe buyers were present from every part of the United States.

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Mention was made last month of the acquisition of a new general manager and a new secretary by the Mayflower Rubber Works Co., South Braintree, Massachusetts. George E. Jeandheur, the general manager, was for 21 years with the New Jersey Car Spring & Rubber Co., Jersey City, New Jersey, where, under the leadership of John J. Fields, the president, he acquired a knowledge and experience of the mechanical rubber business which aptly fits him for his new position. He retired from the secretaryship of the New Jersey company soon after Mr. Fields relinquished his interest in that organization, and now has accepted the above-mentioned position with the Mayflower company. With him he brought Richard K. Fields, son of the former president, who becomes secretary of the Mayflower organization.

Another change is the recent appointment of A. D. Lamont as factory superintendent. He comes from the Davol Rubber Co., where for a number of years he was superintendent.

It is reported that the Mayflower company is planning to enter a new field of manufacturing within a short time, but it not yet ready to announce its plans in this connection.

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Walter M. Farwell, who has been located on Devonshire street for over 25 years as agent for mechanical rubber goods manufacturers, terminated his connection with the Acme Rubber Manufacturing Co., Trenton, New Jersey, and is now New England agent for the Hamilton Rubber Manufacturing Co., of Trenton, carrying its line of mechanical goods and automobile tubes.

Mr. Farwell's experience in the rubber business is interesting. He started as a boy with the late C. S. Knowles, who represented the Star Rubber Co. Twenty-five years ago Mr. Farwell became agent for the Empire Rubber Manufacturing Co., the successor to the Star Rubber Co. George R. Cook was in control of the Empire company, and nine years later, when Mr. Cook was president of the Acme Rubber Manufacturing Co., Mr. Farwell transferred his fealty to the latter company, which he has represented for 16 years. Mr. Cook is now president of the Hamilton Rubber Manufacturing Co., of Trenton, New Jersey, and Mr. Farwell now becomes the New England agent for that concern, which manufactures a line of mechanicals suitable to the trade which Mr. Farwell covers.

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A two-team baseball league, composed of the women workers of The Fisk Rubber Co., Chicopee Falls, Massachusetts, has been organized. Nine games are to be played, the first being played on July 1. One team is recruited from the office force, the other from the factory. Individual cups will be awarded to all girls who play in at least five games.

Lockers for the girls, where they may keep their uniforms and other equipment, a shower bath and everything to help the girls make their league a really big success have been planned by the Fisk Social and Athletic Association, which is doing so much to promote the welfare of the workers. This association held an industrial track and field meet July 4.

* * *

The Needham Tire Co., Charles River, Massachusetts, is building an extensive addition to its plant at Needham, which is expected to be completed and in active operation in a month or six weeks. This enlargement will increase the capacity nearly or quite 300 per cent. The company owns 16 acres of land and water power rights at Charles River Station and manufactures a line of tires which stands high in the market. It also produces a line of fiber soles and rubber heels, which branch of the business is increasing.

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Hill Bros. Co., Hudson, Massachusetts, recently incorporated to make men's welt shoes and deal in leather, rubber, etc., expects to install machinery early in August and shortly afterward begin operations in its new 340-foot one-story factory. Lawson T. Hill, the president, was formerly with Lewis A. Crossett, Inc., and Thos. H. Logan Co. The vice-president, George A. Hill, has been with the W. H. McElwain Co. for the last seven years, three in the factories and four as Pacific Coast representative. Clark B. Hill is secretary.

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The Owen Tire Co., 177 Portland street, Boston, which was incorporated at $40,000 in 1917, has recently increased its capital to $250,000. The company operates the Tire Construction Co. and fifteen other retail stores in the New England States, four of them under the name of G. H. McNamara Tire Co., a New Hampshire corporation, and four under the name of Bell Auto Supply Co., a Massachusetts corporation. The officers of the Owen Tire Co. are W. R. D. Owen, president; A. Palder, treasurer, and John E. Crowley, clerk.

The Worcester Tire & Rubber Co., Inc., 14 Harding street, Worcester, Massachusetts, has opened a second store at 681 Main street. Both have the exclusive agency for Worcester County for Keystone, National Speedway and Batavia tires. L. M. Cahn is president of the company.

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Miss K. Brown, shoe manufacturer's agent, London, England, who has been in this country for two or three months, making her headquarters in Boston, sailed for England late last month, after securing the agency for several lines of footwear made in the United States. She will be European agent for the introduction of the footholds manufactured for the Batterman Rubber Co., Boston. She says there is no great demand for rubbers (galoshes) for women in British cities, though the light-weight, foldable footholds are in large demand, and she expects to secure a large trade for these goods, which will come into direct competition with other makes of American-made rubber footwear already introduced.

A corporation has been formed to take over the rubber sole and heel business of the late C. J. Bailey. It is named the Bailey Rubber Heel Co., Inc., with offices at 52 Chauncy street. M. Shuman is president and D. F. Rice, treasurer. This company has purchased the patent rights and trade-marks for the "Monkey Grip Won't Slip" rubber heels and soles, which will be manufactured in black, tan and white rubber. The heels and soles have been described in THE INDIA RUBBER WORLD and are well known in the footwear trade.

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Herbert T. Mason, recently with The Goodyear Tire & Rubber Co., is now treasurer, sales manager and director of the Quabaug Rubber Co., North Brookfield, this state. This company is doing some extensive advertising of its "Armortred" soles and heels.

THE RUBBER TRADE IN RHODE ISLAND.

By Our Regular Correspondent.

THE RUBBER MANUFACTURING PLANTS throughout Rhode Island are being operated on a capacity basis, so far as the help situation will permit, although not to the full facilities of the factories. The shorter week—practically all of the concerns being operated on the 48-hours schedule—and the scarcity of desirable help continuing to be serious handicaps to the manufacturers.

With the easement from night and day work resulting from the closing of government contracts the factories for the first time in more than four years are returning to a nearer approach to normal conditions. One evidence of this is to be seen in the general shutdowns announced for the annual overhauling of machinery, alteration, improvement and renovation of plants, inventory of stocks and vacations of the employes.

The Woonsocket Rubber Co. has announced a shut-down of two weeks at the Woonsocket and Millville plants. The last day of work at each mill was on Thursday, July 31, and the first day's work following the vacation will be on Monday, August 18. The two plants employ about 2,500 operatives, 1,700 at the Alice and 800 at the Millville factory. During the vacation period repairs will be made at each plant.

The factory of the National India Rubber Co. at Bristol has closed down its shoe divisions for a summer vacation, the last day for making up shoes being July 31, and operations will be resumed on Monday, August 18. While the mill is closed improvements are being made.

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The annual announcement of the assessments for the year upon the corporate excess of manufacturing, commercial, and miscellaneous corporations in Rhode Island were made about the middle of the month by the State Tax Commissioners. The figures present an interesting study of business conditions and show that the total valuation of corporate excess in the state for the year is $270,366,059.22. In the list of corporations that have a corporate excess of $10,000 or more are the following that are connected, directly or indirectly, with the rubber industry: American Multiple Fabric Co., $128,399; American Wringer Co., $1,061,936; Anchor Webbing Co., $175,289; Atlantic Tubing Co., $199,290; Blackstone Tire & Rubber Co., Inc., $42,136; Bourn Rubber Co., $230,335; Broadway Tire Exchange, Inc., $30,577; Collyer Insulated Wire Co., $405,056; Davol Rubber Co., $220,569; Everlastik, Inc. (Boston), $351,081; The Fisk Rubber Co. of New York (Chicopee Falls, Massachusetts), $37,600; Glendale Elastic Fabric Co. (Easthampton, Massachusetts), $18,200; Goodby-Rankin Co., $99,840; The B. F. Goodrich Rubber Co. (Akron, Ohio), $254,510; Good Tire & Rubber Co. (Boston, Massachusetts), $204,798; Hamilton Web Co., $246,291; Hayward Rubber Co., Inc., $14,716; the Hill & Lacross Co. (Cranston), $215,880; Hope Rubber Co., $56,724; Hope Webbing Co. (Pawtucket), $1,592,510; Mechanical Fabric Co., $543,867; Narragansett Rubber Co. (Bristol), $137,136; National India Rubber Co. (Bristol), $1,891,236; O'Bannon Corporation (Boston), $1,503,762; Phillips Wire Co., $2,264,042; Revere Rubber Co., $834,627; Shannock Narrow Fabric Co., $90,460; Sterling Tire Corporation (Rutherford, New Jersey), $45,828; Tubular Woven Fabric Co., $120,307; United States Rubber Co. (New York), $2,045,574; United States Tire Co. (New York), $81,341; Washburn Wire Co., $2,103,344; Woonsocket Rubber Co. (Woonsocket), $499,898.

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At the Revere Rubber Co., where the new 48-hour-week schedule has been in operation for more than a month, the management announces that it is very gratifying to note that the production has increased rather than diminished with greater concentration of efforts on the part of the workers since the company, when the working hours were curtailed, saw to it that the wage schedule was adjusted so that the income of the operatives would in no way suffer from the lessening of the working hours. In fact, the wages of all piece and day workers were raised about 12 per cent and a comparison, after the first month under the new schedules, shows that the factory force is making as much and in many cases more than they did under the old 54 or 55-hour schedule.

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About the first of last month 75 of the salesmen of the branch stores of the United States Rubber Co., with a number of officials of the United States Rubber Co., spent a day studying the problems of rubber footwear manufacture at the factory of the National India Rubber Co. at Bristol. They were entertained by officials of the National company during their stay in Bristol, the only drawback being the cold and rainy weather.

The visiting salesmen were met at the depot by a delegation from the National office and escorted to the factory, where the forenoon was spent inspecting the making of shoes in detail from beginning to the end. Luncheon was served at noon, after which the young women of the company's office were partners for the salesmen at the short season of dancing to music by the factory orchestra.

About 2 o'clock automobiles conveyed the visitors on a tour of Ferry Hill, overlooking Mount Hope Bay, and the farm of Colonel Samuel P. Colt, at Pappasquash. Here the party inspected the big cattle barns with their herds of blooded stock. Returning, the visiting Westerners assembled at the Hotel Belvedere, where the salesmen listened to instructive talks by A. W. Lawrence and W. F. Enright, on fabric footwear and rubber shoes, respectively.

Different groups of the men who visited Bristol had been attending schools of salesmanship at the Boston Rubber Shoe Co., Malden, Massachusetts; The Goodyear's Metallic Rubber Shoe Co., Naugatuck, Connecticut; the L. Candee Co., New Haven, Connecticut; the American Rubber Shoe Co., Cambridge, Massachusetts, and Woonsocket Rubber Co., Woonsocket, during the preceding two weeks, and those who were billetted in the latter city presented a large silver loving-cup, engraved with the names of the donors, to George Schlosser, general manager. The cup is for the management of the Woonsocket Rubber Co., in recognition of the kindness bestowed on the salesmen during their stay in that city. Mr. Schlosser responded with a short address of thanks.

After the Regent talk a sumptuous dinner was served at the Belvedere, the dining room being elaborately decorated with flags, while in the hallway was a large banner, reading, "Welcome Salesmen." The large picture over the mantel was drawn by William Doran, and illustrated a group of salesmen on the beach admiring fabric shoes on the feet of a sand bathing-nymph. Led by the orchestra, the party sang popular and patriotic songs and three cheers were given for "Mine Host" Morrissey.

At 6 o'clock, despite the bad weather, a large number of the visitors embarked on the chartered steamer "Sagamore"

for a sail to Providence. On the steamer the orchestra furnished the accompaniment for singing, and "End-Men" Birtwhistle and Holt made a hit with selections from the National India Rubber Co. minstrels. Arriving in Providence, many of the party went to a theater, where reservations had been made, while others took late trains for home.

Ralph W. Holt, assistant to the General Manager, who had the local arrangements in charge, is to be congratulated on the success of the efforts of his committee.

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The Woonsocket Rubber Co. has commenced the erection of a new two-story brick building at the plant of the Alice Mill, on Fairmount street, Woonsocket, to be used as an office building wherein will be concentrated all the executive and administrative offices. The new building will be 62 by 100 feet and will have an ell of one-story, 20 by 10 feet.

* * *

The loss sustained by the fire in the topping room of the shoe department at the National India Rubber Co., at Bristol, some weeks ago, has been adjusted by insurance inspectors from Boston and New York. They visited the plant, made a complete survey of the department where the fire was and computed the insurance on the stock and other material that was damaged by fire, smoke and water.

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The second annual outing of the employes of the Davol Rubber Co. was held last month at Palace Gardens, near Rocky Point, and was attended by 600 employes and friends of the concern. A luncheon was served at noon and the clam-bake enjoyed at 3 o'clock. An athletic program, consisting of a three-legged race, a ladies' potato race, men's potato race, ladies' egg race, men's shoe race, ladies' 50-yard dash, men's 100-yard dash and a baseball game between the married and single men, featured the outing. The married men won the ball game by a score of 5 to 3. After the athletic events dancing was enjoyed, an orchestra furnishing music.

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The Lynn Rubber Manufacturing Co., at Warren, Rhode Island, is doing an increasing business, and many shipments of rubber accessories to boots and shoes are being turned out. The company is now increasing its output of rubber heels and other boot and shoe accessories to such an extent that the factory may be operated night and day.

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The partnership between George Cetenich and George Eukers, doing business as the George Eukers Tire Co., 97 Empire street, Providence, has been dissolved. The affairs are being settled by George Cetenich.

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The Newport Tire and Tube Exchange has removed into larger quarters at 195 Thames street, Newport.

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Joseph Bergel, of Providence, has filed his statement that he is sole owner of the Pawtucket Tire Exchange, 36 North Union street, Pawtucket.

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The Elliott Tire Service, 9 Blackstone street, Woonsocket, is being conducted by Horace W. Elliott, of that city.

* * *

The Federal Felting Co. has decided to double the size of its plant on Canal street, Westerly, Rhode Island.

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The Revere Rubber Co. has been granted a permit by the Inspector of Buildings to construct a two-story addition to its Valley street plant, Providence. The addition will be 100 by 25 feet, constructed of brick, of the mill type of architecture.

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The Bourn Rubber Co., Providence, has commenced extensive alterations in its boiler house on Fuller street in order to increase the steam capacity of the plant.

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The Woonsocket City Council has awarded a contract to the Fabric Hose Co., Boston, for 500 feet of loose-fabric hose and 500 feet of cement-covered hose, each at $1.05 per linear foot, which was the lowest of three bids submitted.

THE RUBBER TRADE IN NEW JERSEY.

By Our Regular Correspondent.

TRENTON RUBBER MANUFACTURERS report that the tire and tube trade is very good at the present time and they expect it to continue until cold weather sets in. Plants making rubber products other than tires and tubes report business as being fairly good. That Trenton rubber manufacturers are optimistic over the future is shown by the numerous plant additions contemplated and already under way. The Hamilton Rubber Co., Trenton, will erect a three-story steel and concrete addition, 75 feet square, to cost about $20,000.

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The Luzerne Rubber Co., Trenton, will erect a two-story factory building of brick, steel and metal sash, 75 by 50 feet, at a cost of $13,000.

* * *

The Joseph Stokes Rubber Co., Trenton, is having erected a structural steel building, 100 by 50 feet, to cost $8,500.

* * *

Herbert H. Coleman, of East Orange, New Jersey, president of the Delion Tire & Rubber Co., has returned from Europe with a large tire order from a French company that will keep the plant busy for some time.

* * *

Milton Cohn, formerly private secretary to John S. Broughton, president of the United & Globe Rubber Co., has been honorably discharged from the army and has been promoted to the position of traveling salesman for the United & Globe company.

* * *

The A. F. Updike Rubber Co., Trenton, has installed a vulcanizing department at its plant on East Front street.

* * *

Harry L. Boyer, manager of the Joseph Stokes Rubber Co., Trenton, has contributed $100 towards the fund being raised for the family of a Trenton policeman who was slain. A number of other Trenton rubber men also gave to the fund.

* * *

The B. F. Goodrich Rubber Co., of Akron, Ohio has leased the six-story concrete and steel building at Park avenue and Fifteenth street, Hoboken. The building has 140,000 square feet of space and it is said that the rental for a term of years will aggregate more than $500,000.

* * *

The Goodyear Tire & Rubber Co., Akron, Ohio, is having the four-story building at 500 Central avenue, Newark, New Jersey, altered extensively. The company will use it as a service station and main distributing branch. The improvements will cost $15,000.

* * *

The Etablissements Bergougnan of Clermont-Ferrand, France, has recently purchased a fully equipped tire plant in Trenton, New Jersey, where the Bergougnan tire will be made The French company is one of the oldest and best-known makers of automobile tires in Europe.

* * *

The Thermoid Rubber Co., Trenton, will build a new plant for the manufacture of tires, tubes, universal joints, rubber hose and other "Thermoid" products.

The Woven Steel Hose & Rubber Co., Trenton, is making molded air and water hose in long lengths. Horace B. Tobin is general manager of the company.

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I. V. Jones, recently appointed superintendent of the Nearpara Rubber Co., Trenton, manufacturer of reclaimed rubber, has been connected with the rubber-reclaiming business since 1904, and was one of the first to develop a process for reclaiming auto tires. He was formerly master mechanic and chief engineer of the United & Globe Rubber Co., and previously was for a number of years factory manager for the Derby Rubber Co. The Nearpara company's plant is being remodeled and enlarged, and, when completed, will be a modern and up-to-date factory.

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The John E. Thropp's Sons Co., Trenton, will build an addition of steel and brick, 63 by 320 feet, with 40-foot bay, covered by a 10-ton traveling crane, and a gallery 23 feet wide across one side and end. The cost is estimated at $75,000. This expansion has been made necessary because of the increased business in the line of machines and mold equipment for manufacturing both automobile and truck tires. Some of the present equipment will be used in the new building in order to improve working conditions in the old.

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The firm of A. W. Faber, Newark, New Jersey, by act of Congress, has been passed to the ownership of American inter-

ON THE BOARDWALK AT ATLANTIC CITY AFTER THE OUTING OF THE RUBBER ASSOCIATION AT ABSECON. LEFT TO RIGHT—HENRY FREY, AL. MYERS, HENRY FERA, JR., AND RICHARD WOHLBERG.

ests and will be known as A. W. Faber, Inc. Henry Fera, Jr., will remain general manager, with the same business organization. The company intends to maintain the high quality of its products and improve them wherever possible.

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The Clark & Stebor Rubber Co., Inc., 709 Berkman street, Plainfield, New Jersey, recently incorporated to manufacture inner tubes, tire repair patches, etc., with a capital of $200,000, has purchased the building at 332-334 Leland avenue for its factory and expects to be in operation in about two months. The officers are Lester P. Clark, president, and Anthony L. Stebor, Jr., inventors and patentees of the C. & S. patch in the United States, Canada, Great Britain and France, and W. G. Crossley, secretary and treasurer.

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The Acorn Rubber Co., New Brunswick, New Jersey, has been organized for the purpose of manufacturing high quality automobile tubes and to engage in the vulcanizing business. R. B. Parsil, of Highland Park, Robert Montalvo, and Louis Kosma, superintendent of the Eckrcde Rubber Co., of Newark, are the interested parties. The company has leased temporary quarters in the Landsberg building in New Brunswick and will later erect a plant for manufacturing purposes.

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The members of the clerical force of the Lambertville Rubber Co., Lambertville, New Jersey, held their annual outing recently at that place. Following the banquet dancing was enjoyed.

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The heavy rains caused damage to the Empire and Joseph Stokes rubber mills, Trenton, during the latter part of July. Both mills are situated along Assanpink Creek and the stream became so high that the lower floors of the plants were flooded. Work in portions of both mills was temporarily abandoned.

PACIFIC COAST NOTES.

By Our Regular Correspondent.

THE OLDFIELD TIRE CO. of Los Angeles has appointed Hess & Sacket, Inc., local distributer of their product. The Oldfield Company will still maintain its warehouse on Los Angeles street to serve the distributers in this and other counties of Southern California and Arizona.

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Grove Hill, one of the best known "road men" connected with the motor tire business of Southern California, has been added to the organization of the J. B. Wood Tire Co., distributer of Hewitt tires in Los Angeles.

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The Sewell Cushion Wheel Co., Detroit, Michigan, is planning to open Pacific Coast factory branches in Portland, Los Angeles and San Francisco.

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F. A. Seiberling, president of The Goodyear Tire & Rubber Co., Akron, Ohio, has arrived in Los Angeles to take the first steps in building the Goodyear plant which is to be erected at Ascot Park, just acquired for that purpose.

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Trinidad E. Lacayo, Nicaraguan Consul in Los Angeles, believes that the logical source of raw rubber for this district is in Central America, particularly Nicaragua. "There are thousands, yes, hundreds of thousands of acres of wild rubber in Nicaragua, which should be gathered and brought to this port," says Señor Lacayo. "In 1916 we exported 200,000 kilos of rubber, worth $256,000, to the United States alone. Those are the latest authentic figures I have, but the amount of rubber now exported, I should say, is worth nearly $500,000 annually, and this is only a fraction of what we produce. Nicaragua, the largest of the Central American republics, has an area of nearly 50,000 square miles, and a population of only 800,000. American business men should send representatives there, as they are doing in other South American countries, and study conditions as they are." Señor Lacayo was native secretary in the Philippines for Governors Taft, Wood and General Funston, at the same time representing his country there.

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"Cliff" Durant, millionaire sportsman, motor car manufacturer and automobile racing champion, has announced that plans have been completed for a speedway to be built in Los Angeles, and a duplicate to be built in San Francisco. Two races yearly are planned to be held at each course, and no purse less than $15,000 will be offered. The Los Angeles and San Francisco courses will be owned by the California Speedway Association, which will be incorporated for $250,000. The local courses will be a mile and a quarter with a minimum width of 70 feet.

They will be of the triple-radius type permitting unlimited speeds in the long straight aways, and allowing for averages of better than 100 miles an hour.

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The B. F. Wade Tire & Rubber Co., Los Angeles, is now manufacturing 400 blow-out shoes and 120 reliners a day at its factory and plans to double these figures in a very short time.

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Fred S. Wilson, vice-president and Pacific Coast manager of the Thermoid Rubber Co., Trenton, New Jersey, is back at his office in Los Angeles after a serious illness of five months, during which he transacted most of his business from his bedside. He plans a visit to the factory during August and will take with him several of his coast representatives.

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The Portland Rubber Mills, Portland, Oregon, are building a new concrete factory, 200 by 75 feet, to cost approximately $100,000. Mechanical rubber goods, heels and soles are the lines in which the concern is expanding. It also does a jobbing business in mechanical rubber goods and leather belting. A branch store is operated in Seattle. The officers are H. C. Huntington, president and manager; M. E. Reed, secretary and treasurer; Henry L. Corbett, E. B. MacNaughton and C. E. McCulloch, directors.

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The Universal Tire Filler Co., Portland, Oregon, has found it necessary to increase its manufacturing facilities. A new plant for manufacturing fillers has recently been started in Vancouver, British Columbia. The installing station of the Universal Tire Filler Co. at Seattle, Washington, has been purchased outright by a syndicate of business men in that city and the Seattle force, with G. M. Fife as manager, will take charge of the company's operations at Vancouver.

The company will soon begin operations in the Middle West, probably locating at Indianapolis, Indiana. Frank A. Hager, general manager, G. W. German, local manager, and G. H. Gossett, superintendent, will supervise the erection of the plant, which will supply the Middle West and eastern trade.

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C. B. Clarke has been appointed retail distributer of United States tires and products in Portland, Oregon, succeeding C. E. Hamilton. For the past four years Mr. Clarke has been superintendent of the Portland Gas & Coke Co.'s garage.

* * *

Joseph G. Howell and Martin F. Swift of the Pacific Tire & Rubber Co., Portland, Oregon, will handle the Canton cord, and Blackstone fabric tires for that territory. Fred Hawley, one of the best known tire salesmen of Portland has joined the organization.

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The Washington Tire & Rubber Co., Spokane, Washington, manufacturer of "Evergreen" tires and tubes, is making a tire of solid black tread and side-wall construction in millimeter sizes, with an extra ply of fabric. It also contemplates undertaking the reclaiming of rubber in the near future. Spokane is fast developing as a rubber manufacturing center of the Northwest, in addition to being the location of branch organizations of several of the large eastern rubber manufacturers. The Washington Tire & Rubber Co. expects to increase its facilities to take care of its share of western business. The officers of the company are: A. G. Hanauer, president; H. S. Burdick, treasurer; R. C. Babbitt, sales director; and E. E. Harding, manager of production.

* * *

Harry Schwartz, for eleven years with Charles T. Wilson Co., Inc., New York City, crude rubber importer, resigned in February last and has started in business as a crude rubber broker at 131 Grand Trunk Dock, Seattle, Washington. A specialty is made of serving Pacific Coast manufacturers in a buying capacity, as well as inspecting crude rubber qualities for some of the leading eastern importers and manufacturers.

THERMOID'S PACIFIC COAST MANAGER.

FRED S. WILSON, vice-president and Pacific Coast manager of the Thermoid Rubber Co., Trenton, New Jersey, has been associated with the Stokes interests for 25 years, having entered the bicycle-tire department as an apprentice and subsequently been made foreman of it. After two years there he was placed in the sales department, traveling through eastern New York and Pennsylvania. Having served in that capacity for a few years, he was then made advertising and sales manager, which position he held for some time.

FRED S. WILSON.

When the company decided to reach out for Western business Mr. Wilson took Chicago and the Middle West as his field of operations, and, having firmly established the business in that territory and become a leading factor in the Middle Western trade, he moved to the Coast, opening one branch and then another as the Coast business developed.

The Thermoid company now maintains branches at San Francisco and Seattle, which are under the personal direction of Mr. Wilson. By having an officer of the company located on the Coast it keeps its extensive trade in close touch with the management.

LONG-FIBER ASBESTOS FROM CALIFORNIA.

The American Asbestos Products Co., San Francisco, California, plans to erect a mill with a working capacity of 400 tons daily, twenty times its present output. Its asbestos-bearing property consists of 600 acres of land on the banks of the Stanislaus River, 150 miles east of San Francisco, and it is estimated to contain millions of tons of the mineral, which runs high in quality, the fiber varying in length from one-half to one inch, suitable for spinning, while the short fiber and screenings are suitable for stucco, cement, and other purposes. The officers of the company are J. A. Voorhees, president; J. N. Morrison, vice-president; and Dr. F. P. Reed, secretary and treasurer.

PLANT OF THE AMERICAN ASBESTOS PRODUCTS CO.

THE GOODYEAR PACIFIC COAST FACTORY.

THE ANNOUNCEMENT by The Goodyear Tire & Rubber Co., Akron, Ohio, of its decision to erect a $4,000,000 rubber manufacturing plant and a $1,500,000 cotton mill in Los Angeles, California, is the most important industrial development in years on the Pacific Coast. All the preliminary details have been settled, the deeds have been placed in escrow for the large tract of land that has been acquired and ground has already been broken for the new enterprise. It is planned to have the plant in actual operation by next March.

PLAN OF THE GOODYEAR PLANT IN LOS ANGELES AND PORTRAIT OF F. A. SEIBERLING, PRESIDENT.

The rubber company is capitalized at $20,000,000 and the Pacific Cotton Mills Co. at $5,000,000. Ascot Park in Los Angeles, famous for its many automobile races, was acquired by the company as the site for the rubber factory and additional acreage in the vicinity, amounting in all to 480 acres, was also purchased. The rubber plant will have a capacity of 3,000 tires a day, an annual business approximating $15,000,000, and will employ 1,500 operatives.

The cotton mills, according to the present plans, will have 33,000 spindles, a capacity of 75,000 pounds of cord fabric and 75,000 pounds of woven fabric, an annual business of $7,500,000, and will employ 1,200 operatives. It is planned to eventually expand both industries to four times the above capacities. The management of the company, in announcing its future plans, is looking forward not only to the increase in the demand for automobile tires but also to the probable increase in the demand for many products requiring rubber and cotton.

In addition to the manufacturing plants the company will erect an industrial city, laying out a large area to be known as Goodyear Park, for a community settlement for its employes. A tract of 160 acres has been set aside for the homes of the workmen. Landscape architects will supervise the improvement of the grounds with boulevards, trees, shrubbery, lawns, etc., and 800 fine houses will be built. The employes are to be permitted to purchase the houses on the instalment plan in payments of about the same amount as rent. No cheap houses will be built, and they will be varied in their style of architecture to make the general appearance of the district more attractive.

Very practical were the reasons that induced F. A. Seiberling, president of The Goodyear Tire & Rubber Co., and the other officers to take this epochal step. California and Arizona produce Egyptian and Pima cotton, and these long-staple varieties, with their superior tensile strength, are essential in the manufacture of high-grade automobile tires and other rubber products. The world's greatest rubber-producing districts are located in the Far East, and crude rubber can be brought across the Pacific to Los Angeles in ships flying the flag of the United States. Superior climatic conditions and freedom from labor troubles are cogent reasons for the coming of the great plant to Los Angeles.

GOOD ROADS MOVEMENT IN CALIFORNIA.

The passage of the $40,000,000 bond issue in California for the expansion of the state highway system, by a vote of more than 7 to 1, is an event of the greatest importance, not only to motorists, tire users and tire manufacturers, but to the good roads movement in general throughout the United States. California's highway system is already one of the best in the country, as the immense number of automobiles, stages and trucks in that state testify, but the construction of new highways will lead to the development of sections which have hitherto been inaccessible. Other states will undoubtedly follow the example of California, and a tremendous impetus to road building all over this country will be the result.

The present system of good roads in California makes it a territory where tires give unusual mileages. Tire performances which would be considered phenomenal elsewhere are common there. It is estimated that good roads extend the life of a tire by one-fifth. Figuring the cost of the average set of tires at $100, and placing the average life of a set of casings at one year, then a saving of $20 a year per car in tire cost may be attributed to good roads.

There are approximately 350,000 cars in use in California at present. A saving of $20 a car per year on tires would mean $7,000,000 saved in tire wear alone to California motorists. This saving would wipe out the entire bond issue in less than six years. The present year promises to be a banner year for good roads.

"DUNLOP 1919 GROOVED" NON-SKID TREAD.

The Dunlop Rubber Co., Limited, London, England, is producing a new non-skid tread design which is said to be highly effective as well as durable, due to the fact that the bulk of the tread rubber is placed along the line of greatest wear. This pattern is to be supplied on all future orders for grooved tires as fast as stocks become available.

NEW DUTCH TIRE FACTORY.

As a consequence of war conditions, making difficult the importation of tires into Holland, a new company called the Rubberfabrik "Vredestein," has been organized at Loosduinen, near the Hague, to manufacture pneumatic tires.

FRENCH IMPORT DUTY ON AUTOMOBILE TIRES.

Effective after July 12, 1919, automobile pneumatic tires, casings and inner tubes, imported into France from the United States are subject to a surtax of 10 per cent ad valorem in addition to the import duty of $13.13 per hundred pounds net weight.

Under the minimum tariff, which applies to imports from the United Kingdom and certain other countries, the present rate is $8.75 per hundred pounds plus 5 per cent ad valorem. Under a recent ruling automobile tires had been dutiable at the rate of 70 per cent ad valorem, together with automobiles weighing less than 2,500 kilos (5,509 pounds), and parts for the same, and this rate continues to apply to other parts when intended for automobiles weighing less than 2,500 kilos.

The Mid-West Rubber Manufacturers' Association.

JOHN W. MAGUIRE,
President.

JOHN T. CHRISTIE,
Vice-President.

PRESTON E. ROBERTS,
Secretary-Director.

A. V. CONRADT,
Treasurer.

C. WRIGHT.

B. B. FELIX.

MARSHALL D. WILBUR.

W. W. TODD,
Assistant Secretary.

OFFICERS AND DIRECTORS OF THE MID-WEST RUBBER MANUFACTURERS' ASSOCIATION.

THE MID-WEST RUBBER MANUFACTURERS' ASSOCIATION, organized some months ago with headquarters at Chicago, has already demonstrated the power and advantages of association effort when rightly directed. The monthly meetings are well attended, and, judging from the earnest discussions, the various members are striving to secure as much important information as possible concerning the problems that relate to the industry.

That there are many problems to be solved in the near future is a matter upon which all are agreed, and, as the industry is comparatively new in the Middle and Western States, the organization of this new association was a commendable move on the part of the manufacturers of that section.

Locating the association headquarters at Chicago makes it possible for the various members to attend the monthly meetings without incurring a great deal of traveling expenses. Most of the middle and Western manufacturers purchase much of their supplies in Chicago and hence meetings of the association can be attended and other business matters transacted on the same trip.

The idea of forming a Mid-Western association was evolved by John W. Maguire, general manager of the rubber department of the Brunswick-Balke-Collender Co. Mr. Maguire believed such an organization was necessary to represent the rubber manufacturers of that vast territory west of the Ohio river, and he found no difficulty in gaining other enthusiasts to the cause. Within the short space of three months the idea had developed into an active organization, with offices in the McCormick building and an efficient and enthusiastic management in charge.

It is probable that some manufacturers who have become identified with the rubber industry during the past two years do not fully appreciate the functions and importance of association endeavors. The fact that in practically every line of manufacture and in nearly every field of enterprise men have seen fit to form associations to protect and advance their combined interests is, in itself, conclusive evidence that the utility of associations is generally recognized. When governed by enthusiastic officials, and when energy and intelligence dominates, a manufacturers' association can frequently find means to bridge difficult chasms

which would greatly perplex an individual manufacturer if left to himself.

The Mid-West Rubber Manufacturers' Association has started its first year with a strong organization of officials and directors. Each seems anxious to further the power and importance of the Association and is willing to lend his time and ability to the cause. Various features of advantage will be developed by the officials in charge and the members will, without doubt, fully recognize and appreciate what is being accomplished in their behalf when they realize the results of the association's endeavors.

The following are the officers and directors for the ensuing year: John W. Maguire, president; John T. Christie, vice-president; Preston E. Roberts, secretary; W. W. Todd, assistant secretary; A. V. Conradt, treasurer; directors, John W. Maguire, chairman, the Brunswick-Balke-Collender Co.; John T. Christie, Hawkeye Tire & Rubber Co.; Preston E. Roberts, Perfection Tire & Rubber Co.; A. V. Conradt, Kokomo Rubber Co.; Marshall D. Wilber, Palmer Tire & Rubber Co.; C. Wright, Racine Auto Tire Co., and B. B. Felix, Featheredge Rubber Co.

NATIONAL ASSOCIATION OF WASTE MATERIAL DEALERS, CLASSIFICATION FOR SCRAP RUBBER.

CIRCULAR E.

THIS STANDARD OF PACKING was adopted by the Scrap Rubber Division and approved by the Executive Committee of the Association on June 17, 1919, to be effective from July 1, 1919, to July 1, 1920, at which date a new circular will be issued.

All goods bought or sold under the following specifications are understood to consist only of domestic or Canadian manufacture, unless otherwise stipulated. All grades of scrap rubber shall be bought and paid for net weight, mill weights to govern, and no allowance for bagging or covering of any kind shall be made, nor shall the same be returned to the seller.

DELIVERY.

A.—All shipments of scrap rubber must be contained in bags, bales, bundles or other suitable containers, and if shipped loose a charge of ¼ cent per pound shall be made for extra handling, except automobile tires and railroad hose which may be shipped loose.

B.—1. A car load, unless otherwise specified, shall consist of fifteen tons. 2. A ton when applied to domestic stock shall mean 2,000 pounds., A ton when applied to foreign stock shall mean 2,240 pounds.

C.—Shipments direct to a mill shall consist of not less than 2,000 pounds. Otherwise a charge of ¼-cent per pound shall be made.

D.—All scrap rubber of foreign manufacture shall be bought C. I. F. port of entry as per weight determined by sworn weigher's certificate, seller to bear expense of weighing, and shall be subject to same conditions as govern purchases of domestic manufacture.

REJECTIONS.

E.—Upon his request all objections shall be returnable to the seller within thirty days from the time notice of rejection is received by him and upon payment by him of ½-cent per pound to cover cost of sorting and rebaling. If shipping instructions are not furnished within the above mentioned thirty days the purchaser shall be at liberty to make such disposition of the material as he may see fit. The above does not apply if rejected material is purchased by the buyer.

F.—When shipments are made direct to a mill each grade of scrap rubber must be packed separately, and if not so packed a handling charge of ½-cent per pound will be made.

G.—All scrap rubber must be dry and free from dirt. All scrap received wet may be dried by the buyer, such shipments to be paid for on the dry weight as ascertained.

H.—A purchase contract shall not be considered filled until the full quantity within 2½ per cent. more or less net weight shall have been received, any rejections to be replaced within thirty days of the date of notice of rejection to the shipper.

EMBARGO.

I.—If through embargo a delivery cannot be made at the time specified the contract shall remain valid and shall be completed immediately on the lifting of the embargo, and terms of said contract shall not be changed. Notice of embargo must be served by seller.

Code words appear in italics.

1.—RUBBER BOOTS AND SHOES (*Acre*). The deliveries of rubber boots and shoes must consist of rubber boots and shoes of domestic or Canadian manufacture. Red, white, tan, and fancy colored shoes are not a good delivery. They must be dry and free from dirt. All cloth top shoes, trimmed or untrimmed, and soles or heels of rubber boots and shoes from which the uppers have been removed shall not be accepted as a good delivery.

1.-(a)—COLORED RUBBER BOOTS AND SHOES. All rubber boots and shoes which are not black must be packed and sold separately, the grading and packing to conform to Article 1.

2.—TRIMMED ARCTICS (*Band*). Must be closely trimmed and free of leather.

(a)—UNTRIMMED ARCTICS. Must be free from leather.

3.—TRIMMED TENNIS SHOES (*Clam*). Must be black; closely trimmed; free from molded soles and leather.

(a)—UNTRIMMED TENNIS SHOES. Must be free from leather and molded soles.

4.—STANDARD MIXED GRAY AUTO TIRES (*Dirk*). Must be free from the following: All jet black tires, unguaranteed tires, heavy beaded tires, non-pneumatic or filled tires. Must not contain any hard, oxidized, burnt, single tube, motorcycle, stripped or badly worn tires, not tires containing leather or metal.

4.-(a)—JET BLACK AUTO TIRES. Must be free from all gray tires, unguaranteed tires, heavy beaded tires, non-pneumatic or filled tires. Must not contain any hard, oxidized, burnt, single tube, motorcycle, stripped or badly worn tires nor tires containing leather or metal.

5.—UNGUARANTEED TIRES (*Earl*). Must be free from heavy beaded tires, hard or oxidized, stripped, badly worn, and tires with leather and metal.

6.—HEAVY BEADED TIRES (*Farm*). Must be free from hard or oxidized tires, stripped, badly worn and tires with leather and metal.

7.—BADLY WORN TIRES (*Game*). Must be free from hard or oxidized tires, heavy beaded and tires with leather and iron. A reasonable proportion of the tread must be on the tires.

7.-(a)—STRIPPED TIRES. Must be free from hard or oxidized tires, heavy beaded and tires with leather and iron.

8.—No. 1 GRAY AUTO TIRE PEELINGS (*Hawk*). Must be free from cloth, metal, leather and jet black peelings.

8.-(a)—No. 1 JET BLACK PEELINGS. Must be free from gray peelings, cloth, metal and leather.

9.—No. 2 GRAY AUTO TIRE PEELINGS (*Iced*). Must consist of peelings from auto tire treads only and must be free from leather, metal, stripped auto tire fabric and jet black peelings; also free of beadless auto tire stock, from which fabric has been pulled, known as Dykes or Dykes peelings.

9.-(a)—No. 2 JET BLACK PEELINGS. Must consist of peelings from auto tire treads only and be free from leather, metal, stripped auto tire fabric and gray peelings; also free of beadless auto tire stock from which fabric has been pulled, known as Dykes or Dykes Peelings.

10.—BICYCLE TIRES (*Jade*). Must be free from hard or oxidized tires, wire and beaded tires.

11.—SOLID WAGON AND CAB TIRES (*Kite*). Must be free from metal, baby carriage and cushion tires.

12.—SOLID MOTOR TRUCK TIRES (*Lamp*). Tires must be 2½ inches or over in diameter. Must be free from metal and tires with hard bases and fiber bases.

13.—AIRBRAKE HOSE (*Mask*). Must be free from metal, hard or oxidized hose and steam hose.

14.—GARDEN HOSE (*Nail*). Must be ½ inch or over in diameter and free from metal, rags, rope and cotton-covered hose.

15.—LARGE HOSE (*Oven*). Large hose must be one inch or over in diameter. Must be free from metal, rags, rope, hard or oxidized hose and all cotton covered hose.

16.—COTTON-COVERED FIRE HOSE (*Park*). Must be rubber-lined and free from hard or oxidized hose.

17.—No. 1 AUTO INNER TUBES (*Quiz*). Must be strictly pure gum, live floating tubes, free from crusty tubes, cloth metal, red and cloth patches.

18.—No. 2 AUTO INNER TUBES (*Race*). (Known as Compounded Tubes.) Must be standard tubes; free from crusty tubes, cloth, metal, red and cloth patches.

19.—No. 1 BICYCLE INNER TUBES (*Salt*). Must be strictly pure gum, live floating tubes, free from crusty tubes, cloth, metal, red and cloth patches.

20.—No. 2 BICYCLE INNER TUBES (*Train*). (Known as compounded Tubes.) Must be standard tubes, free from crusty tubes, cloth, metal, red and cloth patches.

21.—RED AUTO INNER TUBES (*Utes*). Must be standard tubes, free from punchings, crusty tubes, cloth, metal and cloth patches.

22.—No. 1 WHITE RUBBER (*Vase*). Must consist of strictly clean white soft druggists' sundries and must be free from cloth and metal.

23.—No. 2 WHITE RUBBER (*Ward*). Must consist of white horse-shoe pads, white toys, white mechanical goods, and to be free from cloth, metal, crusty, hard or oxidized material, and white soles and heels.

24.—No. 3 WHITE RUBBER (*Ware*). Must consist of painted white rubber balls or toys from which the paint has been removed, and to be free from cloth, painted wainscoting, metal and hard or oxidized rubber.

No. 4 WHITE RUBBER. Must consist of white jar rings and be free from cloth, metal and hard or oxidized rubber.

25.—WHITE WRINGER RUBBER (*Wren*). Must be strictly white soft rubber, free from yellow wringer rubber, hard or oxidized wringer rubber, cloth or metal.

26.—YELLOW WRINGER RUBBER (*Xray*). Must be free from cloth, metal and hard rubber.

27.—MIXED BLACK RUBBER (*Yoke*). Must be free from cloth, metal, crusty, hard or oxidized material, packing, stripped matting, tiling, baby carriage tires, soles and heels.

28.—MATTING AND PACKING (*Zero*). Must be free from Garlock, Crandall, and piston packing, belting and similar material, metal and hard or oxidized stock.

29.—No. 1 RED RUBBER (*Yeast*). Must consist of soft red druggists' sundries, free from maroon, chocolate, and other dark shades, also free from cloth and metal.

30.—No. 2 RED RUBBER (*Yawl*). Must consist of material such as red toys, balls, mechanical red. Must be free from jar-rings, packing, hard or oxidized rubber, cloth, metal, soles and heels, and maroon and chocolate-colored materials.

31.—RED PACKING (*Yarn*). Must be free from hard or oxidized rubber, cloth and metal and discolored rubber and free from graphite packing.

THE EDITOR'S BOOK TABLE.

COMMERCIAL OILS, VEGETABLE AND ANIMAL WITH SPECIAL Reference to Oriental Oils. By I. F. Laucks, B. S. M. S. First Edition, 1919. John Wiley & Sons, Inc., New York. Chapman & Hall, Limited, London. (Cloth, 4¾ x 7¼ inches, 138 pages.)

THIS valuable little book is intended primarily for the non-technical man in the oil trade. It gives the technical data and information required in every-day dealings in the oil trade, omitting more or less scientific matter.

The book contains four chapters; in the first, oils are classified according to Lewkowitsch, their general properties and physical and chemical characteristics briefly described, together with the preparation of oils and fats from their raw materials.

The second chapter is devoted to the detailed descriptions of the sources and characteristics of over sixty kinds of commercial oils, including vegetable, fish, marine and terrestrial animal oils, and waxes.

In the final chapter the uses of oils are briefly discussed and much interesting information is given. Reference is made to blown oils and the sulphurized oils used as rubber substitute; also to the less well-known fact that nitrated oils are used as rubber substitute.

The book concludes with a tabulation of the properties of many of the less common oils, weights per gallon of oil, etc., and a comprehensive index. It will be appreciated as a handy book of reference by the chemist as well as by the practical dealer in oils.

OFFICIAL REPORT OF THE SIXTH NATIONAL FOREIGN TRADE Convention. Issued by the Secretary of the National Foreign Trade Council, 1 Hanover Square, New York City. Octavo, 650 pages. Cloth. Price $2.

Under the title of "Official Proceedings of the Sixth National Foreign Trade Convention," the National Foreign Trade Council has issued a text-book on foreign trade, replete with information, advice and suggestion. This volume is a stenographic report of the proceedings of the convention held in Chicago April 24-26, 1919.

Representing all parts of the world and all factors in foreign trade, from the production of raw material to the transportation of the finished article, the deliberations and conclusions of this gathering are entitled to the most serious consideration. Especially is this true of the final declaration of the convention, printed at the front of the volume, in which the conclusions of the convention are set forth in a comprehensive legislative program, the first of its kind definitely laid down by the business men of the country.

NEW TRADE PUBLICATIONS.

THE PUBLICATION OF HOUSE ORGANS OR EMPLOYES' papers is a most helpful feature of welfare work. The "C.-H. Messenger," published "for all Cutler-Hammer employees" comes from the Milwaukee, Wisconsin, office of the manufacturing company of that name. The Independence Day issue, printed in red and blue, contains the names of nearly 300 employees who served their country during the war, and shows half-tone portraits of many of them. The little paper is replete with personal notes and factory news, besides contributions from the various branch offices of the Cutler-Hammer Manufacturing Co in other cities.

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"RUBBER LEAVES" COMES TO THIS OFFICE AS A BOUND VOLUME containing twelve numbers of a handsome little horse-organ published by the London Rubber Co., Aberdeen, Scotland, for distribution to its customers. The earlier numbers contained eight pages, some of the later ones 12 pages of deckle-edge paper with heavy covers. There are timely hints to dealers, breezy business advice, information about rubber and rubber processes, sketchy stories with practical business points and advertisements of the specialties of the company, the whole artistically printed, with illustrations in half-tone on glazed paper "tipped in." The volume is bound in half leather, and is well worth a place in the editorial library.

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THE RUBBER PRODUCTS CO., BARBERTON, OHIO, IS SENDING OUT a large circular, which can be utilized as a window poster to advertise its "Stronghold" tires, one side being printed in large type for quick reading, and showing a half-tone cut of the tire at least half actual size. The other side shows the magnified structure of the tire, with appropriate diagrams, half-tones and explanation. Another section pictures and describes the inner tubes made by the company.

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"WE WELCOME FAIR COMPETITION" IS THE TITLE OF A CIRCULAR issued by the Portable Machinery Co., Inc., Passaic, New Jersey. It tells how another firm is trying to market an imitation of the scoop conveyor and warns possible purchasers, as a suit for infringement of patent rights is now pending.

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THE RUBBER DEPARTMENT OF R. T. VANDERBILT CO., 50 EAST 42nd street, New York City, is sending to rubber chemists, superintendents and purchasing agents, valuable information in loose-leaf note-book form.

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BULLETIN No. 22, ISSUED BY WELLMAN-SEAVER-MORGAN CO., Cleveland, Ohio, comprises three charts giving the relations in any shaft between power, shaft diameter, torsional stress, and speed.

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THE BUFFALO FOUNDRY & MACHINE CO., BUFFALO, NEW YORK, has published for distribution a concise 36-page "Popular History of the War," by Merton M. Miller, assistant editor of "The Buffalo Express." The booklet includes excellent maps of the various war fronts and a daily chronology, and is altogether worthy of preservation for ready reference.

* * *

GUTTA PERCHA & RUBBER, LIMITED, TORONTO, CANADA, HAS published a very neat little pamphlet picturing and describing the decorations of honor which have been and are being awarded by the British and French Governments for bravery, distinguished service or conspicuous gallantry during the Great War. Each is shown with the appropriate ribbons pictured in natural colors, while a history of the decoration, the requirements for its award and other facts are given. The company confines its advertising to a few pages at the beginning and end of thte book. The publication is small enough to fit in the pocket, and is therefore convenient to identify such decorations, and gives information as to the reason for their award.

* * *

THE OAK TIRE & RUBBER CO., LIMITED, TORONTO, CANADA, sends out "The Story of the Royal Oak Tire" in handsome pamphlet form, illustrated with half-tone cuts, showing processes of manufacture. The full details of manufacture, from the crude rubber to the finished tire are described and pictured, the whole enclosed in a terra-cotta double cover, the outer one bearing the legend "Tougher than Oak," an outlined landscape and an embossed representation of the tire.

* * *

THE GOODYEAR TIRE & RUBBER CO., AKRON, OHIO, SENDS TO garage owners and tire dealers, a monthly paper entitled "Goodyear Tire News," and another, "The Goodyear—a Family Newspaper," to the branch office of the company and to the employes. The former gives news of Goodyear products, racing news, practical hints on tire repairing and for sale, wanted and business opportunity items. The news items are copiously illustrated with half-tones, and the paper is one which any tire dealer will appreciate.

The "Goodyear—a Family Newspaper"—is devoted to factory

news and matter of interest to members of the big Goodyear family. Both publications are well printed and filled with items of interest to its chosen line of readers.

* * *

THE BREEZE MANUFACTURING CO., NEWARK, NEW JERSEY, HAS published a catalog of its flexible metal hose, tubing and accessories, which contains a large amount of information, technical and commercial, of the manufacture, advantages and uses of metal over rubber for certain purposes. It shows the construction of its all-metal hose and tubing, and the method of combining the imperviousness of rubber with the strength of metal in the hose which contains both. In some of the latter, the spiral metal is so formed that the continuous joint is packed with rubber, in others a special rubber covers the metal hose, and this in turn is covered with duck, with an outside of woven cotton duck, while others have an inner tube of rubber, surrounded by the spiral metal covering. There are other forms, each pictured and described, as are also a large number of flexible shafts, couplings valves and accessories.

* * *

THE FIRST ISSUE OF THE "BULLETIN OF THE NATIONAL ASSOciation for the Protection of American Rights in Mexico" has appeared, dated July 1, 1919. It sets forth the origin and aims of this organization, contains much timely information regarding Mexican conditions, and echoes editorial voices throughout the United States, emphasizing the necessity for early Congressional action relative to the Mexican situation.

* * *

"THE DIGEST," THE MONTHLY ORGAN OF THE MOTOR AND Accessory Manufacturers' Association, came to hand last month in an enlarged form, new dress, and a new editorial policy, the dissemination of news and general information of importance and interest to the manufacturers of motors, parts and accessories for the automotive industry of the United States. Editor M. Lincoln Schuster is striking for a high ideal, and this initial number, under the new policy is evidence of real progress toward its attainment.

RUBBER TRADE INQUIRIES.

THE inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The editor is therefore glad to have those interested communicate with him.

(722.) A manufacturer inquires concerning the nature of the cotton fiber used in composition rubber and fiber soles.

(723.) A request has been received for the addresses of golf-ball winding-machines.

(724.) Information is desired concerning a mealy white powder known as Ednoid.

(725.) A reader has inquired for the "Redmond" brand of tires.

(726.) A subscriber requests the addresses of manufacturers of tire flaps who are prepared to make immediate deliveries.

(727.) Information is desired as to who manufactures the Mathern tire-building machine.

(728.) A subscriber requests information as to how brass valves may be cemented into air retainers.

(729.) The addresses of manufacturers of machines for punching holes for valve bases in tube are requested.

TRADE OPPORTUNITIES FROM CONSULAR REPORTS.

Addresses may be obtained from the Bureau of Foreign and Domestic Commerce or its district or cooperative officers. Request for each should be on a separate sheet, and state number.

(29,725.) The purchase and agency for the sale of bicycle parts, tires and accessories is desired by a wholesale firm in France. Cash on receipt of merchandise. Correspondence in French.

(29,738.) Rubber, reclaimed rubber, chemicals, sheetings, hosiery, rubber machinery and rubber-makers' tools.

(29,812.) A firm in Australia desires to purchase an agency for accessories and tires. Terms, cash against documents or 90 per cent 120 days after sight; also consigned stock to be paid as sold.

(29,816.) A firm in Trinidad, with agents in this country, desires to be placed in touch with manufacturers and exporters of automobile tires and accessories; also cycle accessories.

(29,833.) Agencies are required by a firm in Brazil for the sale of tires and rubber goods. Correspondence in English.

(29,872.) A commercial agent from Norway, who is in the United States, desires to secure agencies for the sale in his country of rubber overshoes and all kinds of rubber goods.

(29,876.) The purchase of crude rubber is desired by a company in Norway. Cash against documents.

(29,881.) Large quantities of rubber heels are required by an importer in Belgium. Quotations c. i. f. Belgian port. Correspondence may be in English.

(29,886.) A merchant in Italy wishes to represent exporters of druggists' and surgical rubber sundries. Correspondence in Italian.

(29,931.) A merchant from France who is in this country desires to purchase rubber goods from manufacturers only for Roumania.

(29,948.) A firm in Persia desires to purchase rubber overshoes. Quotations should be given c. i. f. Persian port. Payment upon arrival of goods. Correspondence in French.

(29,956.) An importer in Switzerland desires to purchase rubber shoes. Quote c. i. f. Rotterdam or Genoa. Cash against documents. Correspondence in German.

(29,968.) A Belgian firm desires to purchase rubber shoes. Quote c. i. f. Antwerp. Cash against documents. Correspondence may be in English.

(29,984.) An American firm desires to secure from manufacturers of rubber machinery the sole agencies for Dutch East Indies. Cash against documents in the United States.

THE OBITUARY RECORD.

GENERAL SUPERINTENDENT OF WESTINGHOUSE SHOPS.

OSCAR OTTO, general superintendent of the Westinghouse Electric & Manufacturing Co. plant at Essington, Pennsylvania, died June 30, the result of an automobile accident three days previous.

He was born in Manitowoc, Wisconsin, January 2, 1859, and as a young man served an apprenticeship in the machine shops of the Chicago & Northwestern Railway, working at his trade in various Wisconsin cities, later going to the Northern Pacific Railroad shops in Tacoma, Washington, and the Oregon Short Line shops at Salt Lake City, Utah.

He came East in 1898 to superintend the shops of the Chicago & Northwestern Railway at Chicago, Illinois, which position he held until June, 1909, resigning to accept the position of general superintendent of the Westinghouse Machine Works at East Pittsburg, Pennsylvania. When this concern built its new plant at Essington he supervised the installation of the machinery there, and later, in February, 1918, was transferred to that plant as general superintendent. He is survived by his widow, a daughter and three brothers.

ALBERTA GLENN SUTHERLAND, WIFE OF HARRY S. VORHIS, formerly secertary of The Rubber Association, recently died at the home of her mother in Waltham, Massachusetts. Mrs. Vorhis was 30 years of age and had been an invalid for some time, having spent the past year at Saranac Lake, New York. To Mr. Vorhis the sympathy of his many friends in the trade is extended.

The Rubber Trade in Great Britain.

By Our Regular Correspondent.

It is now recognized that the prognosticated rise of one shilling per pound in raw rubber on the ratification of peace is unlikely to occur. Owing to the large stocks in England, America, and Singapore it is evident that the demands of the Central Powers, large though they may be, can easily be met without undue pressure on the market, though it is expected that the price may go up three or four pence per pound. Of course things would have been different if the output had been stringently reduced, but with the large output not interfered with by the war the present level of prices was only to be expected.

With new rubber at 1*s.* 8½*d.* per pound and oil substitute up to 10*d.* per pound it is not surprising that there has been a lessened demand for the latter from such branches of the trade as are customarily large users. The position of the substitute trade will also not be rendered any easier by the reimposition of government control over oils, owing to the profiteering which has come into play since restrictions on trading were removed.

WATERPROOF CAP COVERS.

The proofing branch is now almost wholly occupied again on civilian work, new government orders having ceased. One question of the movement is the disposal of large quantities of special goods, such as waterproof cap covers, which the authorities evidently think it is not worth while putting into store. Considering the short time in which such goods were ever used by troops in active service it seems a pity that they were made to such high-class specifications; many of the manufacturers, I understand, advocated a lower quality as being quite good enough to answer the purpose required, but their representations appear to have been unavailing. As regards cap covers, there does not appear to be any public demand for them which would encourage a merchant to bid for those at disposal, and it would seem that their ultimate destination is the reclaimers' works. This sort of thing is not peculiar to the rubber trade, because we hear of metal goods and chemicals that appear to have no market but the scrap heap.

SOLVENT NAPHTHA.

The cessation of war work has resulted in a considerable fall in the price of solvent naphtha, present quotations being 1s. 10d. to 1*s.* 11*d.* per gallon. I note that the American figures for solvent naphtha and benzol have also been much reduced, and are now lower than they were. This was only to be expected considering the great increase in the output during the last five years. This fall in the price of solvent cannot be without its effect upon the various proposals with regard to the recovery of solvents in rubber works. It is well known that very little has been done in this way in the past because the matter is not so simple as it appears to be. The subsidiary advantage that it rendered the atmosphere of the spreading rooms much more pleasant for the war-people did not appeal with any force to manufacturers who held the opinion that the recovery plant could be worked only at a loss. Such a plant has, however, been adopted in several cases by card clothing manufacturers, the machinery having been put in thirty or, perhaps, forty years ago by the Liverpool firm of Siddeley & Co., Limited, not now in existence.

These machines work with ether, and are of a type which is now chiefly found in tropical countries. The reason why the card-clothing manufacturers with their limited number of spreading machines were more attracted by solvent recovery plants than were the rubber proofers was because the refrigerating plant was also used for freezing the blocks for cut sheet and for supplying cold water to the cutting machines. The actual recovery of naphtha does not exceed 30 per cent of the original naphtha used. Proposals, I hear, are now before the rubber trade in which a plant will be erected on a new system giving a guaranteed recovery of a higher figure, and the matter is therefore one worth careful consideration by the trade.

I do not know the details of artificial leather manufacture, and it may be that the process which is said to be giving satisfactory results in American artificial leather works may not work equally well in a rubber works. At any rate, after the stagnation of the last 30 years it is interesting to hear of the problem being resolutely tackled again and by those who express themselves as confident of its proving a financial success.

CABLE WORKS CHANGES HANDS.

The old-established insulated cable works of Connolly Brothers, Limited, Blackley Vale Mill, near Manchester, was sold at auction on June 17, 1919, as a going concern. The sale was by order of the High Court resulting from the action of Wood *vs.* The Company, 1911, and should have taken place some years ago. During the war, however, the concern has been profitably worked by a receiver and a great deal of government work has been carried out. At one time the firm bought its prepared rubber from rubber manufacturers, but at a later date, as in the case of other insulated wire firms, it installed its own rubber machinery. All of the buildings and plant were included in the sale, the stock to be taken over by the purchaser at the auctioneer's valuation, the probable figure for this being put by the auctioneer as somewhere in the neighborhood of £20,000.

With regard to the Vogelsang patents, which had been worked by the firm at a royalty amounting in recent years to about £1,000, it was stated that an arrangement had been made by which the purchaser of the works would have the benefit of the patents without any further payment of royalty. The rubber calenders and the Krupp lead-covering machine were singled out for special mention by the auctioneer, the latter being a machine of high merit which cannot be duplicated, and special reference was made to the enameling processes for which the company has long been noted and the details of which will pass into the purchaser's possession. Although there was a crowded attendance at the sale it was soon clear that the bidding was restricted to two, who raised the initial bid of £15,000 to £35,500, at which figure the concern was sold.

CALLENDER'S CABLE CO., LIMITED.

The annual report shows a profit on the last year's working of £134,968 compared with £121,784. The dividend of 12½ per cent. is really the same as that of 25 per cent declared last year as the capital has been doubled by the distribution of bonus shares from the reserve. The report lays stress on the trading difficulties likely to be experienced, but is couched in an optimistic vein. The shareholders have nothing to complain of in the present report, though some of them expected to receive more. At the present quotation for the £5 shares, the return is 6¼ per cent.

GOVERNMENT OWNERSHIP.

The editorial under this heading in the June issue of The India Rubber World seems very apposite in these Bolshevistic days when everyone is wanting more money for doing less work, and labor is clamoring for the nationalization of this and that industry under the idea that all will be well if the private capitalist is done away with. One may be excused for referring to the topic because, in these parlous days, if you meet a man in the rubber trade, the conversation does not, as of old, run on tech-

nical matters, the markets and so on, but rather on labor problems and where they are going to land our past industrial position. There is no doubt that the borrowed money so lavishly paid by all the belligerents to war workers has had a very unsettling effect upon labor, and it seems to me that much more might have been done by speeches or the issue of free pamphlets to bring home to the people certain of the laws—if we may call them so—of economics.

The opinion is largely held that if a government can find at once as many millions as it wants for war time, it may as well go on doing so in peace time and let everybody be well off. Very little has been done to controvert such fallacious reasoning, and in general too much of the talking has been left to the labor agitator. I gather from the article referred to that nationalization of industries is being advocated in America, so we seem to be in the same boat, though America has this advantage that her labor does not make a fetish of restricted output such as is prevalent in this country.

BRITISH PETROLEUM.

It looks as if the petroleum requirement of the rubber trade will soon be satisfied from home stills. The large refinery of the Anglo-Persian Co. at Swansea is nearing completion, and there is a lot of excitement about the government borings in Derbyshire, where the oil is now flowing in quantity from one of the wells. This oil is not to be distilled in the local surroundings where it is obtained, but is to be sent to Scotland for treatment at the headquarters of the Scotch oil shale industry. As a solvent I may say that petroleum spirit has never been generally used in our rubber trade, preference having been given to coal-tar naphtha and shale naphtha which have always been available in quantity.

SYNTHETIC RESINS.

The paragraph on "Redmanol" in the June issue of THE INDIA RUBBER WORLD is of more interest to the rubber trade, more particularly the vulcanite branch, than is perhaps generally recognized. Since the first patents of Bakeland in 1909, a considerable amount of work has been done in America and Germany on synthetic resin and quite recently research has been devoted to the subject in England. Whether there are any patents that would withstand an action at law seems rather doubtful. There are now, however, a large number of processes based on the original Bakeland reaction of condensing phenol with formaldehyde. Redmanol, I gather, is formed from phenol and hexamethylene tetramine, and its physical properties appear to be of a high order.

The list of uses to which these synthetic resins will be put is undoubtedly destined to be far longer than is at present the case, although they have already replaced vulcanite in many of its applications to quite a large extent. It is a matter of scientific interest how very completely the phenol or carbolic acid loses its distinguishing smell when it is converted into the hard resinous body. Under certain conditions of use, however, such as excessive heat and friction, the smell reasserts itself, and I have heard of complaints being made on account of this. Like rubber, these synthetic resins can be compounded with mineral matter or other inert organic matters though this has to be done before the material attains the condition in which it is described as being as hard as steel.

MISCELLANEOUS FOREIGN NOTES.

PIRELLI CABLE SHIP LOST.

ON JUNE 17 THE CABLE SHIP *Città di Milano*, formerly the property of Messrs. Pirelli, of Milan, Italy, and Southampton, England, struck a rock and sank in the Straits of Messina with a loss of twenty-six lives. Among the deaths reported are those of Italo Brunelli, general inspector of Italian Posts and Telegraphs; Professor Jona, one of the leading authorities in high-tension work, and Signor Pinelli, of the Pirelli staff of experts. Through the prompt assistance of other vessels 101 of the crew were saved. When Italy entered the war the Government took over the Pirelli cableship, and at the time of the disaster Messrs. Pirelli had chartered her from the Italian Navy in order to lay a submarine cable for the Italian Government.

GERMAN SYNTHETIC RUBBER.

Early during the war period German manufacturers were overwhelmed with the call for batteries for submarines. The larger types required batteries of 220 cells of 4,500 hours' capacity, weighing 80 tons and costing about 250,000 marks. During 1917 there were placed in service 86 submarines, and in 1918, 10 to 14 under-sea boats were added monthly. With practically no crude rubber, the need was serious, but F. Bayer & Co. produced a synthetic rubber which successfully substituted the genuine gum in the manufacture of battery boxes. This firm produced about 150 tons monthly, at a cost of 37 marks per kilo ($3.96 per pound).

The "Tagliche Rundchau" states that the Bavarian Postal Administration has been experimenting with tires of synthetic rubber on its post automobiles, and has pronounced the result satisfactory, as far as service is concerned, but that the cost of raw material is much higher than that of natural rubber. The material is manufactured in Bavaria exclusively by the electrotechnical industry.

A RUBBER FACTORY IN CHINA.

The proposed rubber factory in China will use Malayan plantation rubber and Chinese cotton fabrics and manufacture rubber boots and shoes and hard and soft rubber sheets for electrical rubber goods. The manufacture of cycle and motor car tubes and tyres is contemplated.

CRUDE RUBBER STANDARDS BASED ON TECHNICAL EXAMINATION.

Regarding the pamphlet entitled "Conditions Governing Singapore Standard Qualities," issued by the Chamber of Commerce at Singapore, Dr. A. Van Rossem, director of the Netherlands Government Information Service, states that the following specifications are apparently based upon a superficial examination of the rubber.

> 18. First latex crêpe shall be well prepared dry rubber of good quality, of even color, and free from all stains, spots or traces of oxidation.
> 19. F. A. Q. ribbed smoked sheet shall be clean, tough rubber, free from mold, dampness, under or oversmoked sheets. Slight traces of air-bubbles may be allowed, but at the discretion of the Standard Qualities Committee.

Those engaged in the examination of crude rubber on a technical basis have come to the conclusion that the quality of crude rubber cannot be judged by its outside appearance only; on the contrary, in many cases the quality of the rubber can be judged only by vulcanization experiments.

The best proof is that the producers in Java, Sumatra, and also the Federated Malay States, conduct rubber experiment stations to improve upon the manner of preparation by making technical examinations of the prepared product. Both the Centraal Rubberstation at Buitenzorg and the Department of Agriculture at Kuala Lumpur (Federated Malay States) possess a complete technical installation for the examination of rubber, while the General Experiment Station of the A. V. R. O. S. at Medan, Sumatra, is installing a laboratory for the benefit of the rubber plantations.

In this connection, a report from E. Baillaud, Secrétaire Général au Conseil d'Administration de l'Institut Colonial de Marseille, concerning the question how Marseilles could be made a first-class crude rubber port after the war, stated that one of the first steps to be taken is the establishment of a service for the technical examination of crude rubber.

Recent Patents Relating to Rubber.

THE UNITED STATES.

ISSUED JUNE 3, 1919.

1,305,260. Valve for pneumatic tires, tanks, etc, utilizing air under pressure. L.T. Earnhart, assignor to Safety First Devices Co.—both of Indianapolis, Ind.

1,305,261. Valve for pneumatic tires, tanks, etc., utilizing air under pressure. C. B. Earnheart, assignor to Safety First Devices Co.—both of Indianapolis, Ind.

1,305,262. Valve for pneumatic tires, tanks, etc., utilizing air under pressure. C. B. Earnheart, assignor to Safety First Devices Co.—both of Indianapolis, Ind.

1,305,263. Valve for pneumatic tires, tanks, etc., utilizing air under pressure. C. B. Earnheart, assignor to Safety First Devices Co.—both of Indianapolis, Ind.

1,305,264. Valve for pneumatic tires, tanks, etc., utilizing air under pressure. C. B. Earnheart, assignor to Safety First Devices Co.—both of Indianapolis, Ind.

1,305,265. Valve for pneumatic tires, tanks, etc., utilizing air under pressure. C. B. Earnheart, assignor to Safety First Devices Co.—both of Indianapolis, Ind.

1,305,266. Valve for pneumatic tires, tanks, etc., utilizing air under pressure. C. B. Earnheart, assignor to Safety First Devices Co.—both of Indianapolis, Ind.

1,305,552. Tire valve. H. P. Kraft, Ridgewood, N. J.

1,305,622. Reinforced pneumatic inner tube for tires. C. R. Rawdon and J. H. Heitmann, St. Louis, Mo.

1,305,682. Demountable rim for tires. R. W. Ashley, New York City, assignor of ½ to F. Oberkirch, St. Marys, Pa.

1,305,683. Demountable rims for tires, for wire wheels, etc. R. W. Ashley, New York City, and F. Oberkirch, St. Marys, Pa.

1,305,709. Fountain marking-brush. C. A. Garvey, Clayton, Mo.

1,305,812. Metal and rubber shoe-sole. E. E. Nambert, Attalla, La.

1,305,819. Resilient tire for trucks. R. G. McMullen, Portland, Ore

1,305,820. Vehicle wheel with solid rubber tire. C. Macbeth, Birmingham, assignor to The Dunlop Rubber Co., Limited, Westminster, London—both in England.

1,305,867. Crutch tip. M. Atlas, Jacksonville, Fla.

ISSUED JUNE 10, 1919.

1,306,011. Automatic life-saving device. J. Horák, Chicago, Ill.

1,306,055. Automobile tire. W. C. Fleisher, Hackensack, Minn.

1,306,130. Inner tube. L. D. Tibbets, Clayton, Wash.

1,306,184. Syringe. H. S. Jones, Kansas City, Mo.

1,306,243. Woven cartridge-belt with elastic warp in front. W. Achtmeyer, Middletown, Conn

1,306,245. Pressure gage for tire valves. J. A. Bowden, Los Angeles, Calif., assignor to A. Schrader's Son, Inc., New York City.

1,306,303. Mouth-piece for feeding-bottles. F. R. Graham-Yooll, Leith, Scotland.

1,306,334. Reinforced tire casing. A. H. Gruber, Evanston, Ill.

1,306,348. Separable gas-bag for airplane. J. N. Lewis, Detroit, Mich.

1,306,594. Fountain pen. A. L. Sowerby, Baconsthorpe, Holt, Eng.

1,306,454. Resilient vehicle wheel. O. G. Worsley, Chicago, Ill.

1,306,495. Valve-cap for automobile tires. T. D. Millyear, Springfield, Mass.

1,306,515. Divisible rim for tires. J. C. Barker, London, Eng.

1,306,587. Pneumatic tire. L. H. Ferguson, assignor to Ferguson Tire Corp.—both of Ithaca, N. Y.

ISSUED JUNE 17, 1919.

1,306,724. Pneumatic tires with interliner. A. T. Schyllander, assignor of ½ to C. E. Adamson—both of Toledo, O.

1,306,742. Resilient automooile fender with elastic covering. E. B. Bowling, Chicago, Ill.

1,306,787. Pneumatic mattress. M. G. Stevenson, Orange Lake, Fla.

1,306,800. Hose supporter. F. H. Childs, Stroud, Okla.

1,306,814. Demountable rim for tires. J. R. Holcombe, New York City.

1,306,816. Dental syringe for cement. W. R. Howard, Newport, R. I. (Continuation of earlier applications.)

1,306,828. Demountable rim for tires. S. R. McKay, assignor to The McKay Co.—both of Cleveland, O.

1,306,957. Demountable rim for tires. J. N. Foster, assignor of ⅛ to H. Becker and ⅛ to O. Nordwald—all of El Paso, Tex.

1,306,996. Shoe with vulcanizable middle and outer soles. P. H. Brown, assignor to Apsley Rubber Co.—both of Hudson, Mass.

1,307,010. Elastic garment-fastener. C. W. Kinsman, New York City.

1,307,036. Pneumatic tire. H. Bretscher, assignor of 35/100 to F. Spitzner—both of New York City.

1,307,123. Resilient tire. S. D. Hartog, St. Louis, Mo.

1,307,129. Hose clasp. E. Karadaghli, Chatham, N. J.

1,307,164. Resilient tire and adjustable rim. F. B. Turner, assignor of ½ to L. W. Duval—both of Ocala, Fla.

1,307,190. Tire-repair device. F. B. Dunlap, assignor of ½ to E. C. Stricker—both of Tulsa, Okla.

1,307,195. Pneumatic fountain pen. J. F. Gardner, Kansas City, Mo.

1,307,208. Tire with studs projecting through eyelets in tread when in mud or on soft ground, retracting when on hard surface. W. E. Muntz, London, Eng.

1,307,212. Resilient wheel. M. Philipp, assignor to National Auto Wheels Corp.—both of Wausau, Wis.

1,307,245. Valveless syringe. F. S. Dickinson, Rutherford, N. J.

1,307,267. Demountable rim for tires. L. H. Perlman, New York City.

ISSUED JUNE 24, 1919.

1,307,386. Film-holder for X-ray apparatus. H. F. Waite, Whitestone Landing, N. Y.

1,307,423. Detachable rubber heel with reinforcing plate embedded in body portion. L. Smith, S. D. McOsker, and J. R. Simpson—all of Enid, Okla.

1,307,461. Demountable tire-rim with locking device. T. A. Smith, San José, Calif. (Continuation in part of previous application.)

1,307,473. Demountable split tire-rim. E. K. Baker, assignor to Universal Rim Co.—both of Chicago, Ill.

1,307,630. Fountain pen. W. A. Haskins, West Somerville, Mass.

1,307,730. Resilient tire. M. Freedman, Brookline, Mass.

1,307,731. Automobile fan-belt of rubberized woven fabric. C. C. Gates, assignor by mesne assignments to The Gates Rubber Co.—both of Denver, Colo.

1,307,737. Metal-protected rubber heel. W. R. Hildebrand, Chicago, Ill.

1,307,769. Inner tube. F. E. Bessler, Akron, O.

1,307,770. Inner tube. F. E. Bessler, Akron, O.

1,307,782. Fountain pen with electric light. A. Lawres, Brooklyn, N. Y.

1,307,809. Cushion wheel. A. S. Duffies, Markesan, Wis., and F. Mead, Chicago, Ill.

1,307,825. Pneumatic surf mattress. H. B. Marshall, Long Beach, Calif.

1,307,872. Cushion tire. W. R. Miller, Elizabeth, N. J.

1,307,921. Diving armor with waterproof outer suit. E. Nichoff, Brooklyn, N. Y. (Renewed March 21, 1919.)

1,307,922. Cue tip. A. O. Olafson, assignor of ½ to G. A. Brockway—both of Scobey, Mont.

1,307,942. Foldable bath-tub. E. Volters, St. Louis, Mo.

1,307,947. Rubber dust-cap for valve. R. O. Williams, Vicksburg, Mich.

1,307,980. Tire valve. H. P. Kraft, Ridgewood, N. J.

1,307,985. Rubber heel. J. S. Peden, New York City.

1,307,990. Cushion heel. E. D. Stalfort, Baltimore, Md.

ISSUED JULY 1, 1919.

1,308,025. Elastic attachment for corsets. A. M. Anchorstar, New York City.

1,308,037. Tire valve and pressure gage. J. Buchek, Oak Park, Ill.

1,308,053. Milking-machine teat-cup. R. B. Disbrow, St. Paul, Minn.

1,308,082. Milking machine teat-cup. W. H. and M. Koch, Independence, Ia.

1,308,097. Garment supporter. H. Moore, New York City.

1,308,268. Collapsible water-bucket, with handle. C. Wagner, Grantwood, N. J.; A. Hoemel, New York City, and C. J. Vicau, Brooklyn, N. Y.

1,308,375. Parachute with inflatable expander. K. S. Satre, Hecla, S. D.

1,308,416. Cushion tire. C. H. Gunn, Emeryville, Calif.

1,308,427. Combined hot-water and douche bag, with transverse web portion. A. Laborde, New York City.

1,308,561. Life-preserving suit. B. C. Teeters, Ballclub, Minn.

1,308,616. Demountable rim for tires. E. J. Bergman, Vincennes, Ind.

THE DOMINION OF CANADA.

ISSUED JUNE 17, 1919.

190,956. Rubber pad for automobile pedals. G. H. Rives, New York City, U. S. A.

ISSUED JUNE 24, 1919.

191,081. Typewriter eraser and means of attaching to typewriter. F. A. Johnson, University Place, Neb., U. S. A.

ISSUED JULY 1, 1919.

191,322. Suction cup. C. M. Wolcott, New York City, and S. and I. Myerberg, assignees of ¾ of the interest, both in Baltimore, Md.—all in U S. A.

ISSUED JULY 8, 1919.

191,453. Blow-out patch. W. C. Wood, Minneapolis, Minn., U. S. A.

191,475. Demountable rim for tires. W. M. Butler, Calistoga, Calif., U. S. A.

191,478. Nut for bolts on tire-valves. A. Schrader's Son, Inc., New York City, assignee of H. P. Kraft, Ridgewood, N. J.—both in U. S. A.

191,491. Hoof-pad for horses, with lower tread portion of rubber. F. R. Button and G. W. Dunn, assignee of ½ interest—both of Scranton, Pa., U. S. A.

191,495. Demountable rim for tires. I. D. Walter, assignor; J. Brinkerhoff, assignee of 8/15; B. F. Cole, 1/10; T. Flournoy and J. G. Grant, 1/20 each; J. W. Grant and S. A. Latimer, 1/50 each—all of Harrisburg, Ark; and F. and H. C. Shauver, 1/20 each, both of Nettleton, Ark.—all in U. S. A.

THE UNITED KINGDOM.

ISSUED JUNE 4, 1919.

124,699. Infant's outdoor garment, with removable waterproof pad. A. E. White, 88 Chancery Lane, London, Eng. (Venus Manufacturing Co., Boston Block, Minneapolis, Minn., U. S. A.)

124,746. Gutta percha-insulated joint-making packing. Société Anonyme Ateliers Otis-Pifre, 161 rue du Courcelles, Paris. (Not yet accepted.)

124,863. Security bolts for tires, with heads of rubber compound, fabric and rubber, etc. G. W. Beldam, Boston Lodge, Windmill Road, Ealing, and A. U. B. Ryall, Glamorgan House, Brentford—both in Middlesex.

ISSUED JUNE 12, 1919.

124,967. Rubber-lined hose coupling. F. Reddaway & Co., and J. Muskett, Cheltenham street, Pendleton, Manchester.

125,078. Demountable rim for tires. C. F. Rubsam, 233 Broadway, New York City, U. S. A.

125,079. Pressure gage for tires. M. C. Schweinert, 226 Palisade avenue, West Hoboken, N. J., U. S. A. (Not yet accepted.)

125,080. Tire valve. H. P. Kraft, 219 Godwin avenue, Ridgewood, N. J., U. S. A. (Not yet accepted.)

ISSUED JUNE 18, 1919.

125,193. Rubber button. A. Ryner, Parliament Mansions, Victoria street, London.

125,217. Joint-making packing. J. T. Croll, 25 Royal Exchange Square, Glasgow.

Chemical Patents will be found on pages 632, 633. Machinery Patents on pages 635, 636.

125,376. Detachable rubber heel. P. Mengarini, 13 via Cola di Rienzo, Rome.

125,384. Nut for use with tire-valves. H. P. Kraft, Godwin avenue, Ridgewood, N. J., U. S. A. (Not yet accepted.)

ISSUED JUNE 25, 1919.

125,506. Improvements in artificial limbs. T. B. Thompson and W. D. McKinnon, 30 Willcott Road, Acton, Middlesex.

125,552. Driving mechanism for toys, employing elastic cord. R. A. Elton, Claremont, Clarendon Road, Putney, London.

125,571. Externally applied studs for boots, with rubber protector. H. T. Stephens, Tahoona, Ferryside, Carmarthenshire.

125,582. Golf-practicing appliance. C. F. Smith, 2 Lafayette street, White Plains, N. Y., U. S. A. (Not yet accepted.)

125,638. Elastic diaphragms for pressure-operated mechanism in recording instruments, etc. Aeronautical Instrument Co. and G. Brewer, 33 Chancery Lane, London.

125,704. Demountable rim for tires. J. Martin, 1020 Argyle street, Glasgow.

125,731. Manometer with rubber sleeve, etc. M. Walker, School of Technology, Sackville street, Manchester, and A. E. L. Scancse, Strathfield, Harborough Road, Ashton-on-Mersey, Cheshire.

125,756. Improvement in neck of hot-water bottles, etc. A. D. Ingram, London India Rubber Works, Felstead street, Hackney Wick, London.

125,757. Improvement in neck of hot-water bottles, etc. Same inventor as No. 125,756.

125,758. Improvement in socket for stopper of hot-water bottles, etc. Same inventor as Nos. 125,756 and 125,757.

NEW ZEALAND.

ISSUED MAY 29, 1919.

40,079. Milking-machine teat-cup. S. B. Sirfleet, Pirongia, Waikato, N. Z.

41,362. Temporary bottle-stopper of vulcanized rubber. A. H. Thompson, 76 Pitt street, Sydney, N. S. W., assignee of G. C. Maas, "Zenoni," Milroy avenue, and W. Young, "Wilmay," Lenthall street—both of Kensington.

THE FRENCH REPUBLIC.

PATENTS ISSUED, WITH DATES OF APPLICATION.

489,964. (May 6, 1918.) Improvements in tractor wheels, etc. H. Austin.

489,990. (June 10, 1916.) Resilient wheel. R. Fukuda.

490,172. (March 26, 1917.) Extensible life-saving belt. H. Mathouillot.

490,194. (May 22, 1918.) Resilient wheel for vehicles. T. Smodlaka.

490,207. (May 22, 1918.) Improvements in split or demountable rims for wheels. J. C. Borker.

490,265. (May 25, 1918.) Improvements in tubes for pneumatic tires. C. R. Rawdon, J. H. Heitmann, and C. D. Hall.

20,728-487,766. (March 8, 1918.) First certificate of addition to the patent taken out November 27, 1917, for improvements in abdominal belts and similar articles. F. G. Baugatz.

490,313. (July 7, 1914.) Puncture-proof pneumatic tire. A. Allirol.

490,387. (June 6, 1918.) Interchangeable rubber washer for shoe soles. P. H. M. Gavalda, 3 rue de Courcelles, Paris, France.

490,405. (June 7, 1918.) Valve for pneumatic tires. Société Michelin & Cie.

490,418. (June 8, 1918.) Improvements in automobile tires. W. I. Varner.

490,438. (June 11, 1918.) Improvements in the joints of artificial limbs. D. W. Dorrance.

490,485. (June 13, 1918.) Improvements in artificial limbs. F. H. Critchley.

490,493. (June 14, 1918.) Device for forming air chambers in tires. P. Mandelli.

TRADE MARKS.

THE UNITED SATES.

NO. 102,319. Representation of a seal on a ribbon, bearing the monogram MCS—pneumatic tire and tube patches. Motor Car Supply Co., Chicago, Ill.

108,736. The word ALLPACK—fruit-jar rubbers. Acme Rubber Manufacturing Co., Trenton, N. J.

109,695. Representation of a colossal inflated red rubber life-belt inclosing the word JIFFY, above the words "THE CARTRIDGE DOES IT," and a girl in a bathing suit and a sailor leaning against opposite sides of the belt—life-belts of rubber, with a sealed compressed-air tube for charging. Jiffy Life Belt Manufacturing Corp., New York City.

111,974. The word BOOSTER—shoes, now made of leather. United States Rubber Co., New Brunswick, N. J., and New York City.

111,975. The word ROSCO—shoes, now made of leather. United States Rubber Co., New Brunswick, N. J., and New York City.

111,979. The words SPOT LIGHT—shoes, now made of leather. United States Rubber Co., New Brunswick, N. J., and New York City.

111,980. The word AUTOCRAT—shoes, now made of leather. United States Rubber Co., New Brunswick, N. J., and New York City.

111,982. The word ELSIE—shoes, now made of leather and a combination of leather and cloth. The United States Rubber Co., New Brunswick, N. J., and New York City.

112,034. The word WORKSTER—workers' clothing of fabric, fabric and rubber, etc. United States Rubber Co., New Brunswick, N. J., and New York City.

112,460. The word HAYES—men's, women's, and children's shoes, boots, and slippers, made of leather, suitable fabrics, rubber, or a combination of two or more of these materials. E. Hayes, Inc., New York City.

112,605. Representation of a school-house in silhouette, resting on a rectangle, the two superimposed on a circle—rubber erasers, etc.

113,785. The word DoRo—belting, hose, and machinery packing. The Doermann-Roehrer Co., Cincinnati, O.

114,516. Representation of a stencil inclosing the words AMERICAN ZINC L. & S. Co., AZO, LL—zinc oxides for use as paint pigments. American Zinc, Lead & Smelting Co., Boston, Mass., and St. Louis, Mo.

114,517. Representation of a stencil inclosing the words AMERICAN ZINC L. & S. Co., AZO, LLL—zinc oxides for use as paint pigments. American Zinc, Lead & Smelting Co., Boston, Mass., and St. Louis, Mo.

114,520. Representation of a stencil inclosing the words AMERICAN ZINC L. & S. Co., AZO, ZZZ—zinc oxides for use as paint pigments. American Zinc, Lead & Smelting Co., Boston, Mass., and St. Louis, Mo.

114,831. The word RUSSELL within an oval—woven cartridge and other woven military belts. The Russell Manufacturing Co., Middletown, Conn.

116,062. The words HORSESHOE GOOD LUCK HEEL above representation of a horseshoe and the words RACINE AUTO TIRE CO.—molded rubber and composition cushion heels and heel lifts. Racine Auto Tire Co., Racine, Wis.

116,184. Representation of a denture bearing the words NATURAL GUMS—artificial denture. Dr. T. J. King—Clarence W. King, D. D. S., Inc., Boston, Mass.

116,840. The words LAS-STIK in fancy letters—fabric and rubber repair patches. Las-Stik Patch Manufacturing Co., Hamilton, O.

116,920. The word TEXSHED—waterproof textile fabrics. Eastern Finishing Works, Inc., Kenyon, R. I.

117,175. The words TIP TOP—nursing nipples, etc. Whitall Tatum Co., New York City.

117,113. The word PARATOL—waterproof textile fabrics. Eastern Finishing Works, Inc., Kenyon, R. I.

117,223. The word XLO—rubber tires and tubes. Excello Tire & Rubber Co., Philadelphia, Pa.

117,508. The word BRASBESTOS—brake lining. "Scandinavia" Belting, Limited, London, Eng.

117,729. Representation of the ship *Mayflower*—inner tubes and tires. Mayflower Rubber Works Co., Braintree, Mass.

117,731. Representation of the ship *Mayflower*—hot-water bottles, syringes, etc. Mayflower Rubber Works Co., Braintree, Mass.

117,732. The word MAYFLOWER—inner tubes and tires. Mayflower Rubber Works Co., Braintree, Mass.

117,734. The word MAYFLOWER—hot-water bottles, syringes, etc. Mayflower Rubber Works Co., Braintree, Mass.

117,873. The word ERCO—rubber and composition soles and heels. Essex Rubber Co., Trenton, N. J.

117,988. The word "RETARDEAU" quoted—waterproofing preparation for wearing apparel and textile fabrics. Pearson Products Corp., New York City.

118,485. The word DOLPHIN—rubber garden hose. Simmons Hardware Co., St. Louis, Mo.

THE DOMINION OF CANADA.

24,393. The word SILKLASTIC—suspenders and garters. The Dominion Suspender Co., Limited, Niagara Falls, Ont.

24,439. The words SHUR-ON—belting, hose, and packing; rubber and fabric interliners: friction cloth; tire putty; rubber paints; rubber and canvas footwear; weather stripping, rubberized sheeting; and rubber rolls. Dunlop Tire & Rubber Goods Co., Limited, Toronto, Ont.

24,448. The word SECURITY on representation of a tire—automobile tires and accessories. H. C. Hatch, Montreal, Que.

24,469. The words TIGER BRAND and the representation of a tiger's head in a circle—rubber roofings, etc. Thos. Birkett & Son Co., Limited, Ottawa, Ont.

24,471. The word TRANSPORT—rubber tires and tubes. The Canadian Fairbanks-Morse Co., Limited, Montreal, Que.

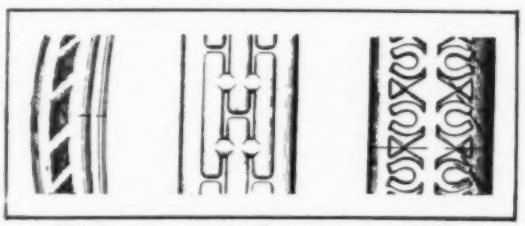
24,477. The word HUSH—chewing gum, etc. Frederick Webb Brooke, Toronto, Ont.

DESIGNS.

THE UNITED STATES.

NO. 53,410. Tire. Patented June 10, 1919. Term 14 years. L. R. Davis, assignor to Revere Rubber Co.—both of Providence, R. I.

53,426. Automobile wheel. Patented June 10, 1919. Term 14 years. W. J. P. Moore, New York City.



53,410 53,427 53,479

53,427. Pneumatic tire. Patented June 10, 1919. Term 14 years. I. R. Renner, Akron, O., assignor to The B. F. Goodrich Co., New York City.

53,479. Tire or tire-casing. Patented June 17, 1919. Term 3½ years. C. Wright, assignor to Racine Auto Tire Co.—both of Racine, Wis.

THE DOMINION OF CANADA.

4,591. Resilient semi-pneumatic wheel. Patented May 10, 1919. Joseph Monkhouse, Guelph, Ont.

4,602. Garter. Patented May 17, 1919. Kitchener Suspender Co., Limited, Kitchener, Ont.

THE FRENCH REPUBLIC.

5,751. Rubber heel. Patented January 16, 1919. H. Victor, 37 boulevard du Temple, Paris.

5,791. Vulcanized and calendered belting bearing the words ROMANS M. C B. Patented January 16, 1919. Manufacture de Caoutchouc de la Drôme, Romans, Drôme.

The Review of the Crude Rubber Market.

JULY WAS A QUIET MONTH in the crude rubber market, due to the apathy of both buyers and sellers to agree on prices. As visible supplies were ample and arrivals for the month promised to be unusually heavy the manufacturers were not interested, moreover, holders anticipated heavy buying on the resumption of trade with Germany. The failure of this movement together with the break in sterling exchange and a lack of demand depressed the market and prices weakened. Sellers, however, refused to make concessions in accord with the buyers' views and the market became dormant.

The following quotations indicate the price movement of plantation and South American Para rubber.

PLANTATION *Hevea:* July 1, first latex crêpe, spot 42½ cents; July-September, 43; October-December, 44½, and January-June, 1920, arrivals, 46 cents. July 24, first latex crêpe, spot 40½ cents; August-September, 40¾; October-December, 43; January-June, 1920, arrivals, 45 cents.

July 1, ribbed smoked sheets, spot 41½ cents; July-September, 42½; October-December, 43½, and January-June, 1920, arrivals, 45 cents. July 24, ribbed smoked sheets, spot 39½ cents; August-September, 39¾; October-December, 42, and January-June, 1920, arrivals, 44 cents.

July 1, No. 1 amber crêpe, spot 39 cents; August-December, 39½, and January-June, 1920, arrivals, 41½ cents. July 24, No. 1 amber crêpe, spot 37 cents; August-December, 37, and January-June, 1920, arrivals, 39 cents.

July 1, No. 1 roll brown crêpe, spot 30 cents; July-December, 31; and January-June, 1920, arrivals, 31½ cents. July 24, No. 1 roll brown crêpe, spot 29½ cents; August-December, 29; and January-June, 1920, arrivals, 30 cents.

SOUTH AMERICAN PARÁS AND CAUCHO. July 1, spot prices were: upriver fine, 55; islands fine, 47½; upriver coarse, 32; islands coarse, 21, and Cametá coarse, 22 cents. July 24, spot prices on these sorts were: upriver fine, 54¾; islands fine, 48; upriver coarse, 32; islands coarse, 21, and Cametá coarse, 22 cents.

NEW YORK QUOTATIONS.

Following are the New York spot quotations, for one year ago, one month ago and on July 28, the current date:

	August 1, 1918. Free Rubber.	July 1, 1919.	July 28, 1919.
PLANTATION HEVEA—			
First latex crêpe	63 @	40 @	41 @41½
Amber crêpe No. 1	60 @	38 @	38 @
Amber crêpe No. 2	60 @	37 @	37 @
Amber crêpe No. 3	58 @	36 @	36 @
Amber crêpe No. 4	57 @	35 @	35 @
Brown crêpe, thick clean	60 @	36 @	35 @
Brown crêpe, thin clean	60 @	36 @	35 @
Brown crêpe, thin specky	50 @	34 @	32 @
Brown crêpe, rolled	44 @	29½@	29 @29½
Smoked sheet, ribbed, standard quality	62 @	39 @	40 @
Smoked sheets, plain, standard quality	61 @	37 @	39 @
Unsmoked sheet, standard quality	60 @	36 @	38 @
Colombo scrap No. 1	46 @	30 @	32 @
Colombo scrap No. 2	44 @	28 @29	30 @
EAST INDIAN—			
Assam crêpe	60 @	*56 @	*58 @
Assam onions	54 @	@	@
Penang block scrap	@	*38 @	*40 @
PONTIANAK—			
Banjermassin	15 @	14 @	13¼@
Palembang	@	@	14½@
Pressed block	25 @	25 @	21½@
Sarawak	@	@	11 @
SOUTH AMERICAN—			
PARAS—			
Upriver fine	68 @	55¼@56	54½@55
Upriver medium	63 @	51 @	*52 @
Upriver coarse	40 @	34 @	32 @
SOUTH AMERICAN—			
PARAS—			
Upriver weak, fine	56 @	46 @	39 @
Islands, fine	59 @	48 @	48 @
Islands, medium	@	43 @	*44 @
Islands, coarse	27 @	21 @	*21 @
Madeira, fine	@	57 @	55½@
Acre Bolivian, fine	@	56½@	55 @
Cametá, coarse	28 @	22½@	*22 @
Peruvian fine	@	54 @	53 @
Tapajos fine	@	53 @	53½@
CAUCHO—			
Lower caucho ball	36 @	30½@	29 @
Upriver caucho ball	40 @	48 @	48 @
MANICOBAS—			
Ceara negro heads	38 @	*25 @	*34 @
Ceara scrap	37 @	*30 @	*29 @
Manicoba (basis 30% loss washing and drying)	42 @	34 @	*32 @
Mangabeira thin sheet	40 @	38 @	*38 @
CENTRALS—			
Corinto scrap	38 @39	35 @37	31 @
Esmeralda sausage	39 @	35 @	31 @
Central scrap	39 @	34 @	31 @
Central scrap and strip	@	32 @	29 @
Central wet sheet, 25%	@	28 @	20 @21
Guayule, 20% guarantee	35 @	25 @	25 @
Guayule, dry	48 @	36 @	35 @
AFRICANS—			
Niger flake, prime	28 @	@	@
Benguela, extra No. 1, 28%	33 @	*24 @	24 @
Benguela No. 2, 32½%	29 @	*26 @	25 @
Congo prime, black upper	50 @	38 @39	35 @
Congo prime, red upper	48 @	*34 @	35 @
Rio Nunez ball	55 @	@	@
Rio Nunez sheets and strings	@	@	@
Conakry niggers	@	@	@
Massai sheets and strings	55 @	@	@
GUTTA PERCHA—			
Gutta Siak	23 @	25 @	22 @
Red Macassar	3.00 @	3.15 @	2.60 @
BALATA—			
Block, Ciudad Bolivar	71 @	75 @	78 @
Colombia	61 @	@	61 @62
Panama	50 @	50 @60	48 @
Surinam sheet	95 @	1.05 @1.10	93 @94
amber	97 @	@	94 @95

* Nominal.

RECLAIMED RUBBER.

The market has continued dull and featureless, which is expected at this time of the year when buying is usually confined to routine orders and occasional replacement lots. The preparations being made by footwear, insulated wire and mechanical goods factories for a good autumn business are favorable signs for reclaims. Prices have not changed.

NEW YORK QUOTATIONS.

JULY 26, 1919.

Subject to change without notice.

Standard reclaims:		
Floating	lb.	.30 @ .35
Friction	lb.	.30 @ .35
Mechanical	lb.	.11 @ .12
Red	lb.	.20 @ .25
Shoe	lb.	.14¾@ .15¼
Tire, auto	lb.	.16 @ .16¾
truck	lb.	.12 @ .13
White	lb.	.24 @ .25

UNDER DATE OF JUNE 24, ADVICES FROM AMSTERDAM, HOLLAND, report the resumption of the crude rubber market at that port. Direct imports from the Dutch East Indies are being received and find a ready sale, latex being quoted Fl. 1.20 and ribs, Fl. 1.15 per one-half kilo.

COMPARATIVE HIGH AND LOW SPOT RUBBER PRICES.

	July. 1919.[1]	1918.	1917.
PLANTATIONS—			
First latex crêpe...	$0.42½@$0.39½	$0.63 @$0.63	$0.67½@$0.65
Smoked sheet ribbed	.41½@ .38½	.62 @ .62	.67½@ .65
PARAS—			
Upriver fine	.55¼@ .55	.68 @ .68	.69¼@ .68
Upriver coarse	.33 @ .32	.40 @ .40	.49 @ .49
Islands fine	.47½@ .47½	.59 @ .59	.63½@ .61
Islands coarse	.21½@ .21½	.27 @ .27	30 @ .28½
Cametá	.21½@ .21½	.28 @ .28	.33 @ .32

[1]Figured only to July 25.

THE MARKET FOR COMMERCIAL PAPER.

In regard to the financial situation, Albert B. Beers, broker in crude rubber and commercial paper, No. 68 William street, New York City, advises as follows:

"During July the demand for paper has been light and mostly from out-of-town banks, the best rubber names going at 5½ per cent to 5¾ per cent and those not so well known at 6 per cent."

WEEKLY RUBBER REPORT.

GUTHRIE & CO., LIMITED, Singapore, report [June 5, 1919]:

At the weekly rubber auction which commenced yesterday there was a strong demand for standard grades at prices which, on the average, show a further slight decline. The top price for ribbed smoked sheet was 74½ cents, paid for five lots only, but the bulk of this grade sold at 73/74 cents. Fine pale crêpe sold up to 76½ cents, a drop of 1 cent on the week. Off quality lots of sheet and crêpe were readily taken up at last week's prices. Fine brown crêpes were steady, while brown and dark crêpes declined ½ cent. The quantity sold was 547 tons out of 853 tons cataloged.

The following is the course of values:

	In Singapore per Pound.[1]	Sterling Equivalent per Pound in London.
Sheet, fine ribbed smoked.....	72c @ 74½c	1/10⅞ @ 1/11½
Sheet, good ribbed smoked.....	66 @ 71½	1/ 9⅛ @ 1/10¾
Sheet, plain smoked	60 @	1/ 7½ @ ....
Crêpe, fine pale	75 @ 76½	2/ 0 @ 2/ 0⅛
Crêpe, good pale	67 @ 74	1/ 9⅛ @ 1/11⅛
Crêpe, fine brown	59 @ 64	1/ 7⅞ @ 1/ 8⅝
Crêpe, good brown	52 @ 58	1/ 5½ @ 1/ 7⅛
Crêpe, dark	42 @ 52½	1/ 2⅛ @ 1/ 5⅝
Crêpe, bark	37½ @ 43	1/ 1⅛ @ 1/ 2⅞

[1]Quoted in S. S. Currency.

FEDERATED MALAY STATES RUBBER EXPORTS.

It is stated by an official cablegram from Kuala Lumpur that 7,308 tons of plantation rubber were exported from the Federated Malay States in the month of May, as against 7,664 tons in April and 5,851 tons in the corresponding month last year. The total export for five months of the present year was 43,623 tons, compared with 35,396 tons in 1918 and 33,467 tons in 1917. Comparative statistics are appended:

	1917.	1918.	1919.
January .....*tons*	5,995	7,588	7,163
February	7,250	6,820	10,809
March	7,088	7,709	10,679
April	5,955	7,428	7,664
May	7,179	5,851	7,308
Totals.....	33,467	35,396	43,623

STRAITS SETTLEMENTS RUBBER EXPORTS.

An official cablegram from Singapore states that 15,845 tons of rubber were exported from Straits Settlements ports in the month of May, compared with 10,848 tons in April and 13,587 tons in the corresponding month last year. The total export for five months of the present year was 77,666 tons, compared with 35,665 tons in 1918 and 30,741 tons in 1917. Appended are the comparative statistics:

	1917.	1918.	1919.
January .....*tons*	3,562	4,302	14,404
February	6,495	2,334	15,661
March	8,299	8,858	20,908
April	6,103	6,584	10,848
May	6,282	13,587	15,845
Totals.....	30,741	35,665	77,666

Transhipments for month of May (1919), 2,132 tons.

RUBBER IMPORTS AND EXPORTS FOR CEYLON.

IMPORTS.

	January 1 to June 2. 1918.	1919.
Crude rubber:		
From Straits Settlements .....*pounds*	1,471,419	1,087,026
India	1,188,046	612,757
Burma and other countries.....	3,107	.....
Totals	2,662,572	1,699,783

EXPORTS.

	January 1 to June 2. 1918.	1919.
Crude rubber:		
To United Kingdom .....*pounds*	6,325,796	15,227,401
Belgium	.....	29,120
France	22,430	330,010
[1]Victoria	91,975	89,785
[1]New South Wales	156,567	91,700
United States	9,866,909	33,634,370
Canada and Newfoundland.....	2,565,606	260,016
India	1,079	1,977
Straits Settlements	.....	424
Japan	136,818	191,741
Totals	19,167,180	49,786,544

[1]These figures include cargoes for transshipment to New Zealand, other ports of Australia, and dependencies.

(Compiled by the Ceylon Chamber of Commerce.)

PLANTATION RUBBER EXPORTS FROM JAVA.

	March. 1918.	1919.	Three Months Ended March 31. 1918.	1919.
To Holland .....*kilos*	.....	.....	.....	120,000
England	.....	173,000	1,659,000	1,019,000
France	.....	167,000	.....	167,000
United States	292,000	1,864,000	2,060,000	5,035,000
Canada	.....	.....	.....	20,000
Singapore	58,000	459,000	377,000	1,391,000
Japan	8,000	59,000	238,000	125,000
Australia	.....	51,000	.....	117,000
Other countries	.....	.....	.....	11,000
Totals	358,000	2,773,000	4,334,000	8,005,000
Ports of origin:				
Batavia	330,000	1,081,000	2,348,000	4,033,000
Samarang	3,000	133,000	53,000	156,000
Soerabaya	25,000	1,432,000	1,933,000	3,463,000
Other ports	.....	127,000	.....	353,000
Totals	358,000	2,773,000	4,334,000	8,005,000

PLANTATION RUBBER EXPORTS FROM MALAYA.

(These figures include the production of the Federated Malay States, but not of Ceylon.)

	January 1 to March 31. Singapore.	Port. Sweitenham.	Malacca.	Jan. 1 to Feb. 28. Penang.	Totals.
To United Kingdom ...*pounds*	12,561,200	.....	.....	3,512,400	16,073,600
The Continent...	6,507,200	.....	.....	.....	6,507,200
Japan	8,122,800	.....	.....	211,200	8,334,000
Ceylon	50,000	.....	.....	.....	50,000
United States and Canada...	90,528,400	.....	.....	2,052,400	92,580,800
Australia	88,000	.....	.....	.....	88,000
China (Hongkong)	.....	.....	.....	.....	.....
Other countries..	64,800	.....	.....	.....	64,800
Totals.....	117,922,400	.....	.....	5,776,600	123,698,400
For the year 1918..*pounds*	225,100,000	.....	837,600	12,479,200	238,416,800
For the year 1917.....					
For the year 1916.....					
For the year 1915.....					
For the year 1914.....					

(Compiled by Barlow & Co., Singapore.)

EXPORTS OF INDIA RUBBER FROM MANAOS DURING THE MONTH OF MAY, 1919.

EXPORTERS.	NEW YORK. Fine.	Medium.	Coarse.	Caucho.	Totals.	EUROPE. Fine.	Medium.	Coarse.	Caucho.	Totals.	Grand Totals.
Stowell & Co.....*kilos*	.....	.....	.....	133,450	133,450	65,055	8,273	15,883	51,470	140,681	274,131
Tancredo Porto & Co.....	81,585	14,704	25,995	20,716	143,000	8,330	9,288	15,382	.....	33,000	176,000
General Rubber Co. of Brazil...	103,387	7,699	17,479	45,435	174,000	.....	.....	.....	.....	.....	174,000
T. G. Araujo.....	.....	.....	30,960	10,240	41,200	10,147	1,440	41,227	73,260	126,074	167,274
T. A. Mendes & Co.....	10,540	.....	.....	.....	10,540	20,022	.....	.....	.....	20,022	30,562
Amorim Irmãos	5,440	.....	12,690	260	18,390	.....	.....	.....	.....	.....	18,390
Simfronio & Co.....	7,015	1,306	1,628	737	10,686	.....	.....	.....	.....	.....	10,686
Higson & Fall.....	.....	.....	.....	.....	.....	8,490	1,288	214	.....	9,992	9,992
Totals, Manáos	207,967	23,709	88,752	210,838	531,266	112,044	20,289	72,706	124,730	329,769	861,035
In transit, Iquitos.....	837	17,104	268	5,922	24,131	6,611	2,748	3,754	21,498	34,611	58,742
Totals	208,804	40,813	89,020	216,760	555,397	118,655	23,037	76,460	146,228	364,380	919,777

(Compiled by Stowell & Co., Manáos, Brazil.)

CRUDE RUBBER ARRIVALS AT ATLANTIC AND PACIFIC PORTS AS STATED BY SHIP'S MANIFESTS.

PARAS AND CAUCHO AT NEW YORK.

	Pounds.					
	Fine.	Medium	Coarse.	Caucho.	Mixed Rubber.	Total Pounds.
JUNE 24. By the S. S. *Panama*, from Cristobal.						
G. Amsinck &Co., Inc.	.....	.....	[1]448	.....	.....	66,000
JUNE 30. By the S. S. *Alban*, from Maceio.						
T. R. Henderson & Co.	.....	.....	.....	47,000	.....	47,000
Meyer & Brown.....	[2]35,200	.....	63,800	199,700	[4]11,600	310,300
Paul Bertuch.....	276,323	18,519	118,529	80,204	.....	493,575
Gaston, Williams & Wigmore	15,288,000	15,680	51,520	17,920	[4]76,160	15,449,280
[1]Ncuss, Thesslein & Co.	[2]125	.....	.....	.....	.....	44,750
Various	.....	.....	.....	.....	[6]3,000	1,488,000
JUNE 30. By the S. S. *Alban*, from Manáos.						
General Rubber Co..	17,920	.....	4,480	2,240	.....	24,640
Various	.....	.....	.....	.....	[3]410	45,100
JUNE 30. By the S. S. *Alban*, from Pará.						
Meyer & Brown, Inc.	.....	.....	63,800	199,700	[4]11,600	275,100
H. A. Astlett & Co...	35,000	20,000	53,000	68,000	[4]46,000	220,000
[5]Poel & Kelly.....	217,600	69,200	130,800	328,000	[4]11,878	757,478
JUNE 30. By the S. S. *Mayaro*, from Trinidad.						
Ygleslas & Co., Inc..	.....	.....	.....	.....	.....	[6]1,060
S. Amsinck & Co., Inc.	33,000	.....	.....	.....	.....	[6]33,000
General Export & Commercial Co....	[7]171	.....	.....	.....	.....	22,000
JULY 3. By the S. S. *Dunstan*, from Manáos.						
Poel & Kelly.....	79,094	10,153	46,963	.....	.....	136,210
Various	[2]129	[4]	[2]149	.....	[2]9	9,210

[1]Bales, Peruvian and Mollendo.
[2]Cases.
[3]Including medium.
[4]Camerá.
[5]From Manáos also.
[6]Angostura.
[7]Packages, including medium.
[8]Bales and cases.

PLANTATIONS.

(Figured 180 pounds net to the bale or case.)

	Shipment from:	Shipped to:	Pounds.	Totals.
MAY 27. By the S. S. *Yomei Maru*, via Yokohama, at Seattle.				
L. Littlejohn & Co., Ltd.	Kobe	London	95,040	95,040
JUNE 2. By the S. S. *Suwa Maru*, via Yokohama, at Seattle.				
L. Littlejohn & Co., Inc.	Colombo	New York	30,240	
Poel & Kelly.....	Colombo	New York	26,880	57,120
JUNE 2. By the S. S. *Billiton*, at San Francisco.				
Aldens' Successors, Ltd.	Batavia	San Fran.	56,000	
L. Littlejohn & Co., Inc.	Batavia	San Fran.	598,000	
L. Littlejohn & Co., Inc.	Soerabaya	San Fran.	298,000	
General Rubber Co.....	Asahan (Sum.)	New York	312,900	
	Belawan	New York		
Mitsui Bussan Kaisha...	Soerabaya	San Fran.	10,800	
Edward Maurer Co., Inc.	Soerabaya	New York	2,160	
Various	Batavia	New York	83,160	1,361,020
JUNE 6. By the S. S. *Key West*, at Vancouver.				
F. R. Henderson & Co..	Singapore	Seattle	217,080	
F. R. Henderson & Co.	Singapore	New York	174,520	
The B. F. Goodrich Co..	Singapore	Akron	177,660	
William H. Stiles & Co.	Singapore	New York	94,500	
Rubber Trading Co.....	Singapore	Vancouver	56,000	
L. Littlejohn & Co., Inc.	Singapore	New York	257,600	
The United Malaysian Rubber Co.....	Singapore	Seattle	246,400	
The United Malaysian Rubber Co.	Singapore	New York	44,800	
Fred Stern & Co.....	Singapore	New York	112,220	
Poel & Kelly.....	Singapore	New York	90,000	
Vernon Metal & Produce Co., Inc.	Singapore	Seattle	44,640	
E. Boustead & Co.....	Singapore	Seattle	11,160	1,516,580
JUNE 16. By the S. S. *Grayson*, via Shanghai, at Tacoma.				
The B. F. Goodrich Co..	Singapore	Akron	337,680	
J. T. Johnstone & Co., Inc.	Singapore	New York	51,480	
J. T. Johnstone & Co., Inc.	Singapore	Tacoma	50,400	
Frank P. Dow & Co....	Singapore	Tacoma	61,200	500,760
JUNE 18. By the S. S. *Cyclops, via* Yokohama, at Akron.				
The B. F. Goodrich Co..	Hongkong	Akron	371,700	
Various	Hongkong	Akron	387,900	
JUNE 18. By the S. S. *Colombia*, at San Francisco.				
Firestone Tire & Rubber Co.	Hongkong	Akron	82,440	82,440
JUNE 18. By the S. S. *Methven*, at Vancouver.				
The B. F. Goodrich Co..	Singapore	Akron	546,480	
Rubber Trading Co.....	Singapore	New York	33,600	
General Rubber Co.....	Singapore	New York	829,600	
Fred Stern & Co.....	Singapore	New York	134,424	
The Goodyear Tire & Rubber Co.	Singapore	Akron	101,340	
Meyer & Brown, Inc....	Singapore	New York	56,000	
L. Littlejohn & Co., Inc.	Singapore	New York	56,000	
Various	Singapore	Seattle	29,160	1,786,604
JUNE 24. By the S. S. *Port Augusta*, at New York.				
L. Littlejohn & Co., Inc.	London	New York	560,000	
Pell & Dumont, Inc...	London	New York	153,900	
R. F. Downing & Co....	London	New York	67,500	
Various	London	New York	174,780	956,180
JUNE 24. By the S. S. *Soerakarta*, at San Francisco.				
Aldens' Successors, Inc.	Soerabaya	New York	100,800	
J. T. Johnstone & Co., Inc.	Soerabaya	San Fran.	51,300	
The Goodyear Tire & Rubber Co.	Batavia	San Fran.	433,680	
The Goodyear Tire & Rubber Co.	Soerabaya	Akron	27,540	
Various	Soerabaya	Akron	64,080	
Various	Batavia	San Fran.	19,800	697,200
JUNE 27. By the S. S. *Yetorofu Maru*, at San Francisco.				
Various	Singapore	San Fran.	122,400	122,400
JUNE 27. By the S. S. *Lowther Castle*, at New York.				
United States Rubber Co.	Singapore	New York	1,843,520	
The B. F. Goodrich Co..	Singapore	New York	930,240	
F. R. Henderson & Co..	Singapore	New York	350,640	
William H. Stiles & Co.	Singapore	New York	238,500	
Pacific Trading Corp. of America	Singapore	New York	62,280	
W. G. Ryckman, Inc....	Singapore	New York	43,560	
Raw Products Co.....	Singapore	New York	40,320	
Chas. T. Wilson Co., Inc.	Singapore	New York	18,000	
Rubber Trading Co.....	Singapore	New York	11,200	
L. Littlejohn & Co., Inc.	Singapore	New York	1,187,200	
Fred Stern & Co.....	Singapore	New York	246,194	
Hadden & Co.....	Singapore	New York	300,780	
Meyer & Brown, Inc....	Singapore	New York	392,000	
Poel & Kelly.....	Singapore	New York	224,060	
Kawaharal Co.	Singapore	New York	167,760	
Balfour, Williamson & Co.	Singapore	New York	54,720	
Thos. A. Desmond & Co.	Singapore	New York	36,000	
The Goodyear Tire & Rubber Co.....	Belawan	New York	180,000	
W. R. Grace & Co.....	Pt. Swet'ham	New York	70,200	
W. R. Grace & Co.....	Belawan	New York	25,560	
Various	Penang	New York	176,400	
Various	Singapore	New York	93,440	6,692,574
JUNE 28. By the S. S. *Defiance*, at New York.				
Various	London	New York	44,460	44,460
JUNE 30. By the S. S. *Empress of Asia*, at Vancouver.				
William H. Stiles & Co..	Hongkong	New York	87,300	
F. R. Henderson & Co..	Hongkong	Seattle	66,420	
Thos. A. Desmond & Co.	Hongkong	New York	44,820	198,540
JUNE 30. By the S. S. *Orduna*, at New York.				
Various	Liverpool	New York	1,440	1,440
JUNE 30. By the S. S. *La Lorraine*, at New York.				
Various	Havre	New York	10,620	10,620
JUNE 30. By the S. S. *Eclipse*, at New York.				
Gravenhorst & Co.....	Hongkong	New York	9,720	9,720
JUNE 30. By the S. S. *Orduna*, at New York.				
Various	Liverpool	New York	1,440	1,440
JULY 1. By the S. S. *Monmouth*, at New York.				
General Rubber Co.....	Singapore	New York	920,640	
Pennsylvania Rubber Co.	Singapore	Jeannette, Pa.	442,180	
J. T. Johnstone & Co., Inc.	Singapore	New York	441,540	
F. R. Henderson & Co..	Singapore	New York	207,180	
William H. Stiles & Co..	Singapore	New York	61,380	
Charles T. Wilson Co., Inc.	Singapore	New York	50,400	
Stein, Hall & Co., Inc..	Singapore	New York	44,800	
Obalski & Sweeney, Inc..	Singapore	New York	21,420	
Raw Products Co.....	Singapore	New York	20,160	
L. Littlejohn & Co., Inc.	Singapore	New York	672,000	
Poel & Kelly.....	Singapore	New York	657,464	
Kawara Company	Singapore	New York	570,960	
Fred Stern & Co.....	Singapore	New York	590,645	
The Goodyear Tire & Rubber Co.	Singapore	New York	505,980	
A. C. Fox & Co.....	Singapore	New York	333,000	
Federal Products Co....	Singapore	New York	217,980	
Meyer & Brown, Inc....	Singapore	New York	194,220	
Vernon Metal & Produce Co.	Singapore	New York	103,140	
Edward Maurer Co., Inc.	Singapore	New York	88,920	
Jaeger & Co., of London.	Singapore	New York	55,080	
Balfour Williamson & Co.	Singapore	New York	53,640	
Peninsular Trading Agency	Singapore	New York	45,180	
Winter, Ross & Co.....	Singapore	New York	45,000	
Mexican Crude Rubber Co.	Pt. Swet'ham	New York	36,000	
E. S. Kuh & Valk Co....	Singapore	New York	15,120	
Various	Singapore	New York	34,200	6,428,229
JULY 2. By the S. S. *City of Rangoon*, at New York.				
United States Rubber Co.	Colombo	New York	224,000	
F. R. Henderson & Co..	Colombo	New York	10,080	
Charles T. Wilson Co., Inc.	Colombo	New York	128,900	
W. R. Grace & Co.....	Colombo	New York	90,000	
Thornett & Fahr.....	Colombo	New York	25,200	
L. Littlejohn & Co., Inc.	Colombo	New York	11,200	489,380

	Shipment from:	Shipped to:	Pounds.	Totals.
JULY 5. By the S. S. *Karimoen*, at New York.				
J. T. Johnstone & Co., Inc.	Batavia	New York	391,500	
F. R. Henderson & Co..	Batavia	New York	156,780	
Manhattan Rubber Mfg. Co.	Batavia	New York	14,220	
Edward Maurer Co., Inc.	Batavia	New York	196,740	
Peninsular Trading Agency	Batavia	New York	184,500	
Fred Stern & Co.	Soerabaya	New York	363,969	
L. Littlejohn & Co., Inc.	Java	New York	481,600	
Winter, Ross & Co.	Batavia	New York	85,480	
Winter, Ross & Co.	Tandjong Priok	New York	70,380	
Foreign Trading Co.	Batavia	New York	8,440	
Catz American Co.	Batavia	New York	59,040	
Poel & Kelly	Batavia	New York	63,070	
Schilthuis & Co.	Batavia	New York	47,520	
Schilthuis & Co.	Tandjong Priok	New York	56,520	
Vernon Metal & Produce Co.	Batavia	New York	43,920	
Meyer & Brown, Inc.	Batavia	New York	38,400	
Rubber Trading Co.	Soerabaya	New York	17,280	
General Rubber Co.	Tandjong Priok	New York	900	
Joosten & Janssen.	Tandjong Priok	New York	155,600	
Gaston Williams & Wigmore		New York	110,160	
[9]Various	Batavia	New York	1,402,680	
Various	Tandjong Priok	New York	438,360	
	Shipment from:	Shipped to:	Pounds.	Totals.
JULY 7. By the S. S. *Baltic*, at New York.				
Various	Liverpool	New York	53,640	53,640
JULY 7. By the S. S. *Yetorofu Maru*, via Calcutta, at Seattle.				
Mitsui & Co., Ltd.	Singapore	New York	113,580	
Mitsui & Co.	Kobe	Seattle	14,400	
William H. Stiles & Co.	Singapore	New York	102,600	
				230,580
JULY 7. By the S. S. *Sommelsdyk*, at New York.				
J. T. Johnstone & Co., Inc.	Batavia	New York	359,100	
J. T. Johnstone & Co., Inc.	Soerabaya	New York	203,440	
General Rubber Co.	Batavia	New York	337,100	
Firestone Tire & Rubber Co.	Batavia	New York	127,800	
Firestone Tire & Rubber Co.	Sourabaya	New York	110,340	
Manhattan Rubber Mfg. Co.	Batavia	New York	23,400	
Poel & Kelly	Soerabaya	New York	384,587	
Winter, Ross & Co.	Soerabaya	New York	311,940	
Winter, Ross & Co.	Batavia	New York	227,520	
Schilthuis & Co.	Batavia	New York	265,140	
L. Littlejohn & Co., Inc.	Java	New York	472,644	
L. Littlejohn & Co., Inc.	Soerabaya	New York	35,460	
Peninsular Trading Agency	Batavia	New York	174,420	
Edward Maurer Co., Inc.	Soerabaya	New York	155,160	
Edward Maurer Co., Inc.	Batavia	New York	77,400	
E. S. Kuh & Valk Co.	Batavia	New York	136,260	
Thos. E. Desmond & Co.	Batavia	New York	115,920	
Federal Export Corp.	Batavia	New York	93,060	
The Goodyear Tire & Rubber Co.	Soerabaya	New York	91,500	
Meyer & Brown, Inc.	Batavia	New York	62,400	
New York Overseas Co..	Soerabaya	New York	57,240	
Fred Stern & Co.	Java	New York	67,200	
Java - Holland - American Trading Co.	Batavia	New York	30,060	
Various	Batavia	New York	113,820	
				3,997,451
JULY 8. By the S. S. *Taiyu Maru*, at Seattle.				
William H. Stiles & Co.	Singapore	New York	190,080	
Mitsui & Co., Ltd.	Batavia	Seattle	102,420	
F. R. Henderson & Co..	Batavia	New York	62,100	
United Malaysian Rubber Co.	Singapore	Seattle	131,040	
L. Littlejohn & Co., Inc.	Soerabaya	New York		
L. Littlejohn & Co., Inc.	Batavia	New York	268,800	
L. Litttlejohn & Co.	Singapore	New York		
The Goodyear Tire & Rubber Co.	Singapore	Toronto	48,960	
[10]The Goodyear Tire & Rubber Co.	Singapore	Akron	720	
				804,120
JULY 10. By the S. S. *Manitou*, at New York.				
Chas. T. Wilson Co., Inc.	London	New York	38,520	
Rogers-Pyatt Shellac Co.	London	New York	9,900	
				48,420
JULY 11. By the S. S. *Saxonia*, at London.				
L. Littlejohn & Co., Inc.	London	New York	194,499	194,499
JULY 13. By the S. S. *Santa Cruz*, at San Francisco.				
Firestone Tire & Rubber Co.	Singapore	San Fran.	588,240	
Gates Rubber Co.	Singapore	Denver	164,340	
Thomas A. Desmond & Co.	Singapore	San. Fran	26,820	
L. Littlejohn & Co., Inc.	Singapore	San Fran.	56,000	
				835,400
JULY 17. By the S. S. *Kosembe*, at New York.				
Chas. T. Wilson Co., Inc.	Colombo	New York	41,950	41,950
JULY 18. By the S. S. *Tatsuma Maru*, via Hongkong, at New York.				
Rubber Trading Co.	Singapore	New York	27,540	
Charles T. Wilson Co., Inc.	Singapore	New York	20,000	
Pacific Trading Corp. of America	Singapore	New York	2,340	
L. Littlejohn & Co., Inc.	Singapore	New York	638,400	
Gaston, Williams & Wigmore	Singapore	New York	54,180	
Edward Maurer Co., Inc.	Singapore	New York	49,500	
Various	Singapore	New York	278,820	
				1,070,780
JULY 18. By the S. S. *Clan Murray*, at New York.				
General Rubber Co.	Colombo	New York	156,800	
Chas. T. Wilson Co., Inc.	Colombo	New York	72,440	
Rubber Trading Co.	Colombo	New York	33,600	
Foel & Kelly	Colombo	New York	107,712	
L. Littlejohn & Co., Inc.	Colombo	New York	56,070	
Fred Stern & Co.	Colombo	New York	22,400	
				449,022
JULY 19. By the S. S. *Lapanto*, at New York.				
Curry, McPhillips & Co..	Hull	New York	4,500	4,500

[9] 96 cases, or 28,280 pounds in excess.
[10] Shortshipped, *Genchu Maru*.

BALATA.

JUNE 24. By the S. S. *Garrillo*, at New York.				
Isaac Brandon & Bros..	Port Limón	New York	150	150
JUNE 24. By the S. S. *Alliance*, at New York.				
Neuss, Hesslein & Co..	Cristobal	New York	1,050	
W. Reed Williams, Inc.	Cristobal	New York	450	
				1,500
JUNE 28. By the S. S. *Defiance*, at New York.				
Various	London	New York	3,900	3,900
JULY 1. By the S. S. *Alamo*.				
American Trading Co.	Cartagena	New York	3,900	3,900
JULY 7. By the S. S. *Colon*.				
G. Amsinck & Co., Inc..	Cristobal	New York	9,600	
Isaac Brandon & Bros..	Cristobal	New York	450	
Various	Cristobal	New York	9,900	
				19,950
JULY 10. By the S. S. *Advance*.				
Neuss, Hesslein & Co..	Cristobal	New York	1,050	1,050
JULY 11. By the S. S. *Saronia*, at New York.				
Various	London	New York	3,150	3,150
JULY 14. By the S. S. *Lakehurst*, at New York.				
J. S. Sembrada & Co.	Cristobal	New York	26,700	
Gaston, Williams & Wigmore	Cristobal	New York	4,650	
Heilbron, Wolff & Co..	Cristobal	New York	3,300	
Antioquia Commercial Corp.	Cristobal	New York	3,000	
Various	Cristobal	New York	2,250	
				39,900
JULY 15. By the S. S. *Gen. H. F. Hodges*, at New York.				
G. Amsinck & Co., Inc.	Cristobal	New York	4,500	
Piza, Nephews & Co.	Cristobal	New York	300	
				4,800
JULY 18. By tthe S. S. *Maraval*, at New York.				
South & Central American Commercial Co.	Trinidad	New York	29,850	29,850
JUNE 20. By the S. S. *Gen. O. H. Ernst*, at New York.				
Pablo Calvet & Co.	Cristobal	New York	10,950	
Antioquia Commercial Corporation	Cristobal	New York	3,000	
				13,950
JUNE 30. By the S. S. *Mayaro*, at New York.				
G. Amsinck & Co., Inc..	Trinidad	New York	34,350	
South & Central American Commercial Co.	Trinidad	New York	26,400	
Various	Trinidad	New York	1,950	
				62,700

CENTRALS.

JUNE 24. By the S. S. *Garillo*, at New York.				
G. Amsinck & Co., Inc..	Port Limón	New York	900	
Isaac Brandon & Bros..	Port Limón	New York	300	
				1,200
JUNE 27. By the S. S. *San Jacinto*, at New York.				
United States Rubber Export Co.	Havana	New York	720	720
JULY 1. By the S. S. *Alamo*, at New York.				
American Trading Co..	Cartagena	New York	6,200	6,200
JULY 7. By the S. S. *Colon* at New York.				
Isaac Brandon & Bros..	Cristobal	New York	700	700
JULY 11, By the S. S. *Grecian*, at New York.				
H. E. Botzow	Caracas	New York	400	400
JULY 14. By the S. S. *Lakehurst*, at New York.				
J. S. Sembrada & Co..	Cristobal	New York	400	400
JULY 15. By the S. S. *Gen H. F. Hodges*, at New York.				
Pablo Calvet & Co.	Cristobal	New York	25,000	
G. Amsinck & Co., Inc..	Cristobal	New York	15,500	
J. S. Sembrada & Co..	Cristobal	New York	4,700	
Various	Cristobal	New York	2,000	
				47,200
JULY 16. By the S. S. *Mexico*, at New York.				
Various	Havana	New York	27,100	27,100
JULY 17. By the S. S. *Lake Hilson*, at New York.				
G. Amsinck & Co., Inc..	Cristobal	New York	1,500	
Various	Cristobal	New York	800	
				2,300
JULY 18. By the S. S. *Maraval*, at New York.				
G. Amsinck & Co., Inc..	Trinidad	New York	38,700	
South & Central American Commercial Co.	Trinidad	New York	18,500	
				57,200
JUNE 20. By the S. S. *Gen. O. H. Ernst*, at New York.				
Pablo Calvet & Co.	Cristobal	New York	7,200	
W. R. Grace & Co.	Cristobal	New York	4,100	
G. Amsinck & Co., Inc..	Cristobal	New York	3,200	
Heilbron, Wolff & Co..	Cristobal	New York	1,000	
				15,500

GUTTA PERCHA.

	Shipment from:	Shipped to:	Pounds.	Totals.
JULY 5. By the S. S. *Karimoen*, at New York.				
Various	Soerabaya	New York	45,300	45,300
JULY 7. By the S. S. *Sommelsdyk*, at New York.				
United Malaysian Rubber Co., Ltd.	Soerabaya	New York	52,500	52,500

GUTTA SIAK.

JULY 1. By the S. S. *Monmouth*, at New York.				
L. Littlejohn & Co., Inc.	Singapore	New York	63,000	63,000

GUTTAS.

JUNE 30. By the S. S. *Elipse*, at New York.				
Bush & Daniels	Hongkong	New York	8,700	8,700
JULY 5. By the S. S. *Karimoen*, at New York.				
Various	Soerabaya	New York	9,900	9,900
JULY 7. By the S. S. *Sommelsdyk*, at New York.				
United Malaysian Rubber Co., Ltd.	Soerabaya	New York	8,700	8,700

MANICOBAS.

JULY 12. By the S. S. *West Indian*, at New York.				
General Commercial Co.	Bahia	New York	1,450	1,450
JULY 12. By the S. S. *Talisman*, at New York.				
W. R. Grace & Co.	Bahia	New York	13,420	13,420

PONTIANAK.

JUNE 27. By the S. S. *Lowther Castle*, at New York.				
Yaeger & Co.	Shanghai	New York	215,400	
United Malaysian Rubber Co., Ltd.	Shanghai	New York	197,400	
Kidder, Peabody & Co.	Shanghai	New York	183,600	
L. Littlejohn & Co., Inc.	Shanghai	New York	154,500	
Various	Shanghai	New York	303,300	1,054,200
JULY 1. By the S. S. *Monmouth*, at New York.				
United Malaysian Rubber Co., Ltd.	Singapore	New York	59,100	
Various	Singapore	New York	57,300	116,400
JULY 5. By the S. S. *Karimoen*, at New York.				
Various	Singapore	New York	20,100	20,100
JULY 7. By the S. S. *Yetorofu Maru*, via Calcutta, at Seattle.				
Meyer Bros. & Co.	Singapore	San. Fran.	27,300	27,300
JULY 7. By the S. S. *Sommelsdyk*, at New York.				
United Malaysian Rubber Co., Ltd.	Soerabaya	New York	5,400	
J. T. Johnstone & Co., Inc.	Batavia	New York	67,200	
Various	Batavia	New York	539,400	1,115,400
Various	Socrabaya	New York	503,400	
JULY 16. By the S. S. *Persia Maru*, via Hongkong.				
F. R. Henderson & Co.	Singapore	New York	171,720	
Gaston, Williams & Wigmore	Singapore	New York	61,200	232,920
JULY 18. By the S. S. *Tatsumo Maru*, via Hongkong, at New York.				
F. R. Henderson & Co.	Singapore	New York	75,300	
Pacific Trading Corp. of America	Singapore	New York	59,700	
G. Kawahara Co.	Singapore	New York	60,000	195,000
JULY 18. By the S. S. *Clan Murray*, at New York.				
Poel & Kelly	Colombo	New York	662,400	
Meyer & Brown, Inc.	Colombo	New York	321,120	983,520

UNITED STATES CRUDE RUBBER IMPORTS FOR 1919 (BY MONTHS).

1919.	Plantations.	Parás.	Africans.	Centrals.	Guayule.	Manicoba and Matto Grosso.	Totals for 1919.	Totals for 1918.
January ...*tons*	4,906	2,141	2	114	72	...	7,235	16,084
February	14,079	2,701	489	100	87	...	17,456	13,108
March	23,680	3,808	337	211	187	...	28,223	17,161
April	24,678	2,794	90	144	330	110	28,146	13,425
June	13,645	1,706	264	263	390	51	16,319	24,124

(Compiled by The Rubber Association of America, Inc.)

ITALIAN RUBBER IMPORTS AND EXPORTS, 1909-1917.

	Crude Rubber Imported. Tons.	Lire.	Manufactured Rubber Goods.	Imports. Lire.[1]	Exports. Lire.[1]
1917	6,127	55,144,890			
1916	5,320	47,878,200	1917	17,700,000	26,762,000
1915	5,367	42,938,000	1916	33,042,000	45,519,000
1914	3,054	21,378,000	1915	36,460,000	86,099,000
1913	2,844	25,598,700	1914	27,464,000	62,099,000
1912	3,494	38,438,400	1913	23,818,000	50,087,000
1911	2,419	30,248,750	1912	30,397,000	56,531,000
1910	1,878	21,939,000	1911	33,670,000	25,667,000
1909	32,111,000	21,313,000	1910	44,247,000	29,313,000
			1909	32,111,000	21,313,000

[1]One lira equals $0.193.

OFFICIAL INDIA RUBBER STATISTICS FOR THE UNITED STATES.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

	May. 1918. Pounds.	1918. Value.	1919. Pounds.	1919. Value.
UNMANUFACTURED—*free:*				
India rubber:				
From France	.....	.....	165,219	$46,044
Portugal	128,770	$51,357	84,822	23,750
United Kingdom	3,651,519	2,242,500	2,702,208	1,299,935
Canada	245,490	140,070	94,343	42,816
Central America	76,813	26,533	88,606	23,879
Mexico	332,923	157,434	118,215	61,995
Brazil	4,220,003	1,394,066	4,523,797	1,319,498
Peru	592,565	236,179	86,584	34,212
Other South America	321,500	143,048	56,841	19,175
British East Indies	34,541,168	16,171,456	42,842,093	17,628,968
Dutch East Indies	4,917,229	2,348,769	4,254,278	1,774,146
Other countries	179,556	105,913	461,175	167,199
Totals	49,207,536	$23,017,325	55,478,181	$22,441,617
Balata	246,395	125,313	53,370	25,826
Guayule	47,950	8,631	565,652	142,285
Jelatong	991,687	56,130	1,597,331	207,256
Gutta Percha	100,800	16,238	744,486	116,722
Totals	1,386,832	$206,312	2,960,829	$492,089
Rubber scrap	700,214	53,849	1,451,278	119,573
Totals, unmanufactured	51,294,582	$23,277,486	59,890,298	$23,053,279
Chicle (dutiable)	554,235	318,921	493,477	348,520
MANUFACTURED—*dutiable:*				
India rubber and gutta percha	.....	$18,830	.....	$123,016
India rubber substitutes	.....	10,158	48,532	3,626

EXPORTS OF DOMESTIC MERCHANDISE.

MANUFACTURED—				
Automobile tires[1]	.....	$1,464,791	.....	$2,360,279
All other tires[1]	.....	66,658	.....	190,725
Scrap and old	320,142	28,455	269,165	28,049
Reclaimed rubber	184,172	30,283	207,303	35,021
Belting, hose, and packing[1]	.....	495,451	.....	638,348
Boots[1] .....*pairs*	11,042	37,658	21,243	57,762
Shoes[1] .....*pairs*	65,835	63,781	185,707	154,440
Druggists' rubber sundries[1]	.....	72,991	.....	126,296
Insulated wire and cables[1]	.....	344,186	.....	838,188
Other rubber manufactures[1]	.....	561,656	.....	796,068
Totals, manufactured	.....	$3,165,910	.....	$5,225,176
Fountain pens.....*number*	12,547	9,001	34,620	39,753

EXPORTS OF FOREIGN MERCHANDISE.

UNMANUFACTURED—				
India rubber	901,931	$470,184	347,738	$134,699
Balata	40,477	24,788	23,240	15,250
Gutta percha	.....	.....	.....	.....
Totals, unmanufactured	942,408	494,972	397,978	149,949
MANUFACTURED—				
India rubber	.... .	$2,061	.....	.....
Gutta percha	.... .	.....	.....	$8,000
Rubber substitutes, elasticon, etc.	.....	.....	.....	.....
Totals manufactured	.....	$2,061	.....	$8,000
Chicle	28,418	14,222	70	130

EXPORTS OF RUBBER GOODS TO NON-CONTIGUOUS TERRITORIES OF THE UNITED STATES.

MANUFACTURED—				
To Alaska:				
Belting, hose and packing	.....	$11,653	.....	$10,282
Boots and shoes...*pairs*	8,847	24,365	9,900	24,212
Other rubber goods	.....	3,485	.....	4,608
Totals	8,847	$39,503	9,900	$39,102
To Hawaii:				
Belting, hose and packing	.....	6,833	.....	6,718
Automobile tires	.....	128,803	.....	78,569
Other tires	.....	5,009	.....	11,562
Other rubber goods	.....	18,358	.....	14,431
Totals	.....	$159,003	.....	$111,280
To Philippine Islands:				
Belting, hose and packing	.....	18,932	.....	23,521
Boots and shoes...*pairs*	2,480	2,777	24,877	25,209
Tires	.....	115,325	.....	120,097
Other rubber goods	.....	29,178	.....	48,256
Totals	2,480	$166,212	24,877	$217,083
To Porto Rico:				
Belting, hose and packing	.....	2,343	.....	1,868
Automobile tires	.....	90,497	.....	15,230
Other tires	.....	1,394	.....	1,055
Other rubber goods	.....	10,371	.....	2,718
Totals	.....	$104,605	.....	$20,871

[1] Details of exports of domestic merchandise by countries during May, 1919, are given on page 670 of this issue.

EXPORTS OF INDIA RUBBER MANUFACTURES AND INSULATED WIRE AND CABLE FROM THE UNITED STATES BY COUNTRIES, DURING THE MONTH OF MAY, 1919.

EXPORTED TO—	Belting Hose and Packing. Value.	Boots. Pairs.	Boots. Value.	Shoes. Pairs.	Shoes. Value.	Druggists' Rubber Sundries. Value.	Tires. Automobile. Value.	Tires. All Others. Value.	Insulated Wire and Cable. Value.	All Other Rubber Manufactures Value.	Totals. Value.
EUROPE:											
Azores and Madeira Islands	*	.....	.....	.....	.....	.....	.....	.....	.....	$34	$34
Belgium	.....	.....	.....	.....	.....	.....	$2,340	$2,396	$53	564	5,353
Denmark	$1,182	.....	.....	16,529	13,134	$1,758	34,507	.....	9,357	1,522	61,460
France	14,368	.....	.....	6,500	4,380	.....	515,034	71,451	4,431	120,753	730,417
Gibraltar	.....	96	$335	144	156	.....	.....	.....	.....	.....	491
Greece	500	.....	.....	.....	.....	.....	4,791	20	670	147	6,128
Iceland and Faroe Islands	.....	4,152	11,286	7,629	6,401	29	3,548	1,467	212	753	23,696
Italy	3,180	.....	.....	.....	.....	7,644	.....	.....	110	999	11,933
Netherlands	393	.....	.....	.....	.....	.....	.....	.....	315	9,272	9,980
Norway	30,803	.....	.....	5,320	3,690	950	111,226	5,329	133,350	5,149	290,497
Spain	630	.....	.....	17	5	961	88,858	.....	.....	4,002	94,456
Sweden	61,633	.....	.....	12	9	506	157,237	8,264	6,752	16,836	251,233
Switzerland	.....	.....	.....	26	40	10,076	.....	.....	49,812	45,198	105,126
Turkey in Europe	.....	.....	.....	.....	.....	.....	14,187	.....	.....	.....	14,187
England	32,852	132	498	24,108	14,363	10,625	199,432	9,950	6,178	122,315	396,213
Scotland	282	.....	.....	800	550	.....	.....	.....	.....	1,916	2,748
TOTALS, EUROPE	$145,823	4,380	$12,119	61,085	$42,728	$32,549	$1,131,160	$98,877	$211,240	$329,456	$2,003,952
NORTH AMERICA:											
Bermuda	$16	4	$14	2	1	$25	$109	$103	$27	$346	$641
British Honduras	289	.....	.....	604	682	71	121	.....	407	31	1,601
Canada	30,370	4,572	16,656	8,991	8,304	18,879	114,948	3,543	5,548	158,164	356,412
Costa Rica	458	.....	.....	30	43	69	1,930	10	959	563	4,032
Guatemala	913	82	107	117	185	832	3,266	165	402	1,169	6,971
Honduras	1,119	.....	.....	1,096	1,384	142	2,833	.....	85	171	5,734
Nicaragua	1,806	24	161	109	72	185	3,180	46	441	820	6,711
Panama	6,035	36	221	1,052	858	1,343	81,247	1,382	2,070	5,442	98,598
Salvador	431	.....	.....	3	4	141	18,456	2,337	267	2,548	24,184
Mexico	60,135	5	20	3,514	2,642	13,325	71,888	7,359	28,651	27,842	211,862
Miquelon, Langley, etc.	22	60	184	.....	.....	.....	.....	.....	.....	.....	206
Newfoundland and Labrador	592	7,267	18,405	182	148	576	1,518	.....	3,281	2,856	27,376
Barbados	26	.....	.....	.....	.....	.....	392	70	19	26	533
Jamaica	563	.....	.....	.....	.....	1,046	12,689	978	757	1,689	17,822
Trinidad and Tobago	318	.....	.....	.....	.....	473	4,380	259	82	118	5,630
Other British West Indies	314	.....	.....	.....	.....	123	1,400	23	475	196	2,530
Cuba	33,442	52	246	28,132	24,327	14,528	121,259	23,073	62,567	46,748	326,190
Danish West Indies	.....	.....	.....	142	124	9	354	.....	.....	5	492
Dutch West Indies	122	.....	.....	.....	.....	.....	446	16	168	367	1,119
French West Indies	344	.....	.....	.....	.....	.....	9,333	183	86	91	10,037
Haiti	68	.....	.....	.....	.....	136	9,017	210	96	977	10,504
Dominican Republic	1,354	.....	.....	36	30	1,180	7,475	188	1,124	1,040	12,391
TOTALS, NORTH AMERICA	$138,837	12,102	$36,014	44,078	$38,736	$53,883	$466,241	$39,945	$107,512	$251,209	$1,131,577
SOUTH AMERICA:											
Argentina	$13	.....	.....	.....	.....	$1,588	$21,997	$11,694	$40,070	$3,298	$78,660
Bolivia	8,490	.....	.....	.....	.....	.....	6,564	.....	2,346	135	17,535
Brazil	40,569	.....	.....	9,683	$8,200	4,870	113,834	7,109	140,341	29,983	344,906
Chile	33,746	.....	.....	852	804	3,753	25,632	2,786	41,400	10,420	118,541
Colombia	216	.....	.....	607	454	1,566	17,528	1,963	6,032	3,847	31,600
Ecuador	179	.....	.....	.....	.....	2,097	1,665	.....	1,662	74	5,677
British Guiana	114	.....	.....	72	89	.....	5,822	96	630	350	7,101
Dutch Guiana	176	.....	.....	.....	.....	42	560	.....	156	79	1,013
Paraguay	264	.....	.....	.....	.....	.....	.....	.....	.....	.....	264
Peru	23,141	39	$277	1,858	1,871	1,534	21,642	105	21,103	1,961	71,634
Uruguay	3,725	.....	.....	7,806	6,574	2,471	53,707	1,391	93,578	6,696	168,142
Venezuela	1,178	.....	.....	.....	.....	1,658	8,078	261	1,713	1,037	13,925
TOTALS, SOUTH AMERICA	$111,811	39	$277	20,878	$17,992	$19,573	$277,029	$25,405	$349,031	$57,880	$858,998
ASIA:											
China	$9,472	25	$105	11,274	$11,367	$1,121	$49,471	$1,019	$8,451	$5,372	$86,378
Japanese China	383	.....	.....	.....	.....	103	.....	.....	.....	127	613
Chosen	.....	.....	.....	.....	.....	.....	357	.....	.....	38	395
British India	10,451	.....	.....	553	418	976	11,386	283	122	23,965	47,601
Straits Settlements	728	.....	.....	192	212	63	52,202	.....	535	453	54,193
Other British East Indies	3,200	.....	.....	120	63	72	.....	.....	109	624	4,068
Dutch East Indies	838	.....	.....	2	2	317	8,324	295	78,890	1,957	90,623
French East Indies	.....	.....	.....	.....	.....	.....	1,198	.....	.....	.....	1,198
Hongkong	.....	1	3	1,934	1,587	141	12,953	748	34	5,250	20,716
Japan	40,324	1,881	4,351	6,886	6,338	464	40,923	19	2,561	22,342	117,322
Russia in Asia	2,667	.....	.....	180	204	.....	.....	.....	813	3,334	7,018
Siam	47	.....	.....	.....	.....	.....	.....	505	41	133	726
Turkey in Asia	.....	.....	.....	.....	.....	.....	410	.....	.....	.....	410
TOTALS, ASIA	$68,110	1,907	$4,459	21,141	$20,191	$3,257	$177,224	$2,869	$91,556	$63,595	$431,261
OCEANIA:											
Australia	$7,633	216	$995	5,252	$2,476	$5,472	$43,976	$2,768	$17,965	$25,483	$106,768
New Zealand	6,264	2,515	3,648	565	712	1,102	81,570	.....	.....	6,872	100,168
Other British Oceania	40	.....	.....	125	165	.....	.....	.....	.....	29	234
French Oceania	138	.....	.....	118	81	8	2,628	383	.....	676	3,914
German Oceania	.....	.....	.....	75	85	.....	612	.....	.....	95	792
Philippine Islands	23,521	60	175	24,817	25,034	1,910	100,843	19,254	31,954	46,346	249,037
TOTALS, OCEANIA	$37,596	2,791	$4,818	30,952	$28,553	08,492	$229,629	$22,405	$49,919	$79,501	460,913
AFRICA:											
Belgian Congo	$1,565	.....	.....	.....	.....	.....	.....	.....	.....	.....	$1,565
British West Africa	53	.....	.....	.....	.....	.....	$10,292	$4	$27	$19	10,395
British South Africa	103,617	24	$75	7,573	$6,240	$9,322	60,208	1,220	28,903	14,306	223,891
British East Africa	.....	.....	.....	.....	.....	.....	551	.....	.....	.....	551
French Africa	2,731	.....	.....	.....	.....	.....	7,777	.....	.....	7	10,515
Portuguese Africa	28,205	.....	.....	.....	.....	20	.....	.....	.....	95	28,320
Egypt	.....	.....	.....	.....	.....	.....	168	.....	.....	.....	168
TOTALS, AFRICA	$136,171	24	$75	7,573	$6,240	$9,342	$78,996	$1,224	$28,930	$14,427	$275,405
TOTALS	$638,348	21,243	$57,762	185,707	$154,440	$126,296	$2,360,279	$190,725	$838,188	$796,068	$5,162,106

(Compiled by the Bureau of Foreign Commerce, Department of Commerce, Washington, D. C.)

RUBBER STATISTICS FOR ITALY.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

	Two Months Ended February.			
	1918.		1919.	
UNMANUFACTURED—	Quintals.[1]	Lire.[2]	Quintals.	Lire.
India rubber and gutta percha—raw and reclaimed:				
From Great Britain	880	.....	.....	.....
India and Ceylon	517	.....	5,143	.....
Straits Settlements	844	.....	6,455	.....
French African Colonies	848	.....	754	.....
Brazil	1,136	.....	4,786	.....
Other countries	284	.....	97	.....
Totals	4,509	4,959,900	17,235	18,958,500
Rubber scrap	168	20,160	.....	.....
MANUFACTURED—				
India rubber and gutta percha—				
Threads	44	96,800	80	176,000
Sheets, including hard rubber	12	14,400	75	90,000
Tubes:				
Elastic fabric	39	35,100	.....	.....
Other forms	.....	.....	17	18,700
Belting	97	106,700	61	67,100
Rubber-coated fabrics—*pieces:*				
For carding combs	37	48,100	50	65,000
Other forms	2	3,000	1	1,500
Boots and shoes—*pairs:*				
From France	3,519		6,471	
United States	192	47,940	2	77,676
Other countries	284		.....	
Totals	.....	.....	.....	.....
Elastic webbing	26	52,000	43	86,000
Manufactures n. e. s.:				
From cut sheets	1	2,600	.....	.....
Elastic fabric	10	12,000	518	621,600
Tires and tubes:				
From France	466		969	
Great Britain	159	1,125,000	.....	1,746,000
Other countries	.....		1	
Other rubber manufactures:				
From France	856		204	
Great Britain	177	1,365,600	3,547	4,509,600
United States	104		6	
Other countries	1		1	
Totals, manufactured	.....	2,929,400	.....	7,459,176
Total imports	.....	7,889,300	.....	26,417,676

EXPORTS OF CRUDE AND MANUFACTURED RUBBER.

.....	Two Months Ended February.			
	1918.		1919.	
UNMANUFACTURED—	Quintals.[1]	Lire.[2]	Quintals.	Lire.
India rubber and gutta percha—raw and reclaimed:				
To Spain	585	.....	1,632	.....
United States	115	.....	.....	.....
Totals	700	245,000	1,632	571,200
MANUFACTURED—				
India rubber and gutta percha—				
Threads	18	39,600	50	110,000
Sheets:				
Cut sheets	6	12,000	18	36,000
Elastic fabric	20	16,000	1	800
Other kinds, including hard rubber	18	18,000	2	2,000
Tubes:				
From cut sheets	3	6,600	.....	.....
Elastic fabric	80	64,000	100	80,000
Other forms	56	53,200	38	36,100
Belting	35	35,000	76	76,000
Rubber-coated fabrics—*pieces.*	32	38,400	1	1,200
Elastic webbing	222	421,800	165	313,500
Manufactures of india rubber and gutta percha n. e. s.:				
From cut sheets	36	79,200	.....	.....
Elastic fabrics	17	18,700	21	23,100
Tires and tubes:				
To France	151		63	
Great Britain	971		121	
Spain	.....		1	
Switzerland	.....	2,343,900	1	1,976,000
Australia	.....		421	
Argentine	4		274	
Brazil	358		286	
Other countries	319		533	
Other rubber manufactures:				
To France	69		32	
Great Britain	86		21	
Spain	7		.....	
Switzerland	103		26	
Egypt	21	367,000	.....	196,000
Argentina	29		39	
Brazil	17		5	
Uruguay	8		4	
Other countries	27		69	
Total expenses	.....	3,758,400	.....	3,421,900

[1] A quintal=220.46 pounds.
[2] A Lira=$.0193.

UNITED KINGDOM RUBBER STATISTICS.

IMPORTS.

	May.			
	1918.		1919.	
UNMANUFACTURED—	Pounds.	Value.	Pounds.	Value.
Crude rubber:				
From—				
Dutch East Indies	228,200	£27,284	2,142,700	£212,573
French West Africa	5,600	560	16,400	790
Gold Coast	9,900	1,063	6,000	633
Other African countries	660,600	68,148	416,200	38,915
Peru	9,700	1,096	27,200	2,521
Brazil	35,400	4,258	2,183,000	229,168
British India	11,700	1,308	666,100	67,463
Straits Settlements and dependencies, including Labuan	655,600	84,710	6,211,700	638,041
Federated Malay States	279,800	34,289	6,555,100	673,939
Ceylon dependencies	1,309,400	157,985	3,454,400	352,028
Other countries	.....	.....	560,900	62,355
Totals	3,205,900	£380,761	22,243,700	£2,278,426
Waste and reclaimed rubber.	10,200	428	412,200	7,856
Totals	3,216,100	£381,189	22,655,900	£2,286,282
Gutta percha	649,712	77,430	339,760	50,593
MANUFACTURED—				
Boots and shoes..*dozen pairs*	980	£10,640	3,297	£5,445
Waterproofed clothing	.....	.....	.....	.....
Automobile tires and tubes	.....	31,063	.....	140,782
Motorcycle tires and tubes	.....	442	.....	4,251
Carriage tires and tubes	.....	.....	.....	1,456
Bicycle tires and tubes	.....	.....	.....	1,766
Insulated wire	.....	.....	.....	483
Totals	980	£42,145	3,297	£154,183

EXPORTS.

UNMANUFACTURED—				
Waste and reclaimed rubber.	979,000	£15,886	602,900	£15,656
MANUFACTURED—				
Waterproofed clothing	.....	£46,804	.....	£97,635
Boots and shoes..*dozen pairs*	9,503	14,423	4,982	14,647
Insulated wire	.....	2,804	.....	75,279
Submarine cables	.....	247,150	.....	37,344
Carriage tires and tubes	.....	14,674	.....	18,246
Automobile tires and tubes	.....	84,413	.....	239,187
Motorcycle tires and tubes	.....	14,839	.....	40,895
Bicycle tires and tubes	.....	18,314	.....	167,949
Other rubber manufactures	.....	160,144	.....	235,933
Totals	9,503	£603,565	4,982	£927,115

EXPORTS—COLONIAL AND FOREIGN.

UNMANUFACTURED—				
Crude rubber:				
To Belgium	.....	.....	450,500	£40,901
France	1,475,200	£178,946	1,844,900	219,843
Italy	2,162,700	275,762	1,378,300	145,616
United States	4,184,100	512,751	2,803,100	279,496
Other countries	182,600	25,350	1,489,700	170,244
Totals	8,004,600	£992,809	8,026,500	£856,100
Waste and reclaimed rubber.	112	5	609	27
Totals	8,004,712	£992,814	8,027,109	£856,127
Gutta percha	11,200	2,263	230,960	25,863
MANUFACTURED—				
Boots and shoes..*dozen pairs*	28	£109	2,337	£4,613
Waterproofed clothing	.....	71	.....	.....
Insulated wire	.....	738	.....	25
Automobile tires and tubes	.....	3,569	.....	17,702
Motorcycle tires and tubes	.....	216	.....	3,069
Bicycle tires and tubes	.....	1,097	.....	.....
Carriage tires and tubes	.....	75	.....	570
Totals	28	£5,875	2,337	£25,979

THE MARKET FOR COTTON AND OTHER FABRICS.

NEW YORK.

PRICES of American cotton have steadily risen during the past month, and on July 23, middling uplands, spot cotton reached 36.20 cents, compared to 29.49 cents last year. Later in the month the market weakened and quotations on July 28 were 35.15 cents. The strong position of American cotton is due to the poorest crop in many seasons, and the extraordinary world demand that is estimated to be 17,000,000 bales, while the estimated supply is 16,500,000 bales.

EGYPTIAN COTTON. The demand continues from abroad for the cotton still remaining in the hands of the Commission, and orders have been coming in freely. The steam-pressed stock shows a heavy shrinkage, and on June 13 stood at only 131,346

bales, including 18,694 bales of linters; the unpressed stock in the hands of the Commission is very small.

All desirable types have practically disappeared, and the demand is for types which spinners previously left severely alone. There is little doubt that the entire stocks of the Commission will be taken up by buyers and the carry-over at the end of the season will be small and composed principally of inferior cotton and linters. In Liverpool, prices continue to rise with the increased demand, and consignment cotton is finding ready buyers at full prices.

SEA ISLAND COTTON. The demand in Southern markets has been greatly in excess of the supply, and a few holders have sold on the higher markets. The general tendency, however, in view of the smallness of stocks and the universal demand, is to await future developments. The new Mead cotton being developed by the Bureau of Plant Industry to replace Sea Island cotton is giving promise of success.

DUCKS AND DRILLS. The buying interest in these materials has been active, and the mills appear to be well sold ahead. The market undertone has been strong and prices on all grades have advanced.

TIRE FABRICS. The demand for spot and future deliveries has been active, and consumers' inquiries have included deliveries for the first six months of 1920. Prices are higher.

Long-staple cotton is very scarce; however, the indications are that tire fabrics will be higher, due to a new cost basis, irrespective of the price of raw cotton. This is partly due to higher wages, as formerly cotton mills paid lower wages than most industries. The stoppage of immigration has eliminated this low-priced labor, so that the mills are now forced to compete for help in the general labor market, which will eventually bring the scale of wages on a par with other industries and increase the production cost of tire fabrics.

NEW YORK QUOTATIONS.

JULY 26, 1919.

Prices subject to change without notice.

ASBESTOS CLOTH:			
Brake lining, 2½ lbs. sq. yd., brass or copper insertion	*lb.*	.85	@
2¼ lbs. sq. yd., brass or copper insertion	*lb.*	.90	@
BURLAPS:			
32—7-ounce	100 *yards*	11.50	@
32—8-ounce		12.50	@
40—7½-ounce		14.40	@
40—8-ounce		14.50	@
40—10-ounce		16.00	@
40—10½-ounce		16.25	@
45—7½-ounce	100 *yards*	15.75	@
45—8-ounce		16.00	@
45—9½-ounce		*15.00	@
48—10-ounce		18.25	@
DRILLS:			
38-inch 2.00-yard	*yard*	.41	@
40-inch 2.47-yard		.33¼	@
52-inch 1.90-yard		.43¾	@
52-inch 1.95-yard		.43⅝	@
60-inch 1.52-yard		.56⅝	@
DUCK:			
CARRIAGE CLOTH:			
38-inch 2.00-yard enameling duck	*yard*	.40	@
38-inch 1.74-yard		.46	@
72-inch 16.66-ounce		.88½	@
72-inch 17.21-ounce		.91⅜	@
MECHANICAL:			
Hose	*pound*	.68	@
Belting		.70	@

CONSUMPTION OF COTTON FABRICS AND YARN DURING 1917.

Kind of Fabric.	American.	Egyptian.	Combed Egyptian.	Peeler.	Combed Peeler.	Sakellarides.	Combed Sakellarides.	Combed Sea Island.	Combinations.	Totals.
COTTON WOVEN FABRICS:—*pounds.*										
Duck—										
Belting duck	16,546,383	.....	.....	757,237	.....	.....	.....	.....	.....	17,303,620
Hose duck	9,453,408	34,721	48,646	.....	.....	.....	.....	.....	175	9,536,950
Belting and hose	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Duck	9,097,469	.....	.....	.....	.....	.....	.....	.....	.....	9,097,469
Miscellaneous	13,538,414	13,292	.....	20,508	.....	.....	.....	217,500	11,430	13,801,144
Total duck	48,635,674	48,013	48,646	777,745	.....	.....	.....	217,500	11,605	49,739,183
Tire fabric—										
Breaker	1,266,239	592,784	149,178	411,593	28,386	.....	.....	520,282	.....	2,968,462
Builder	2,274,534	21,362,390	31,683,915	4,544,530	2,451,944	.....	.....	15,680,785	.....	77,998,098
Chafing	97,652	1,755,865	69,866	1,022,069	29,324	.....	.....	2,783	.....	2,977,559
Miscellaneous	1,840,374	3,296,069	1,459,781	4,870,115	1,477,766	264,917	565,508	1,261,964	.....	15,036,494
Totals, tire fabric	5,478,799	27,007,108	33,362,740	10,848,307	3,987,420	264,917	565,508	17,465,814	.....	98,980,613
Cord fabrics	59,184	6,871	194,376	336,222	38,360	.....	259,584	4,705,585	.....	5,600,182
Sheetings—										
General	27,557,635	2,782	41,463	7,316	.....	.....	.....	18,333	.....	27,627,529
Miscellaneous	5,348,965	45,217	.....	100,175	170,392	.....	.....	199,638	.....	5,864,387
Total sheetings	32,906,600	47,999	41,463	107,491	170,392	.....	.....	217,971	.....	33,491,916
Osnaburgs	4,779,854	.....	.....	10,496	.....	.....	.....	.....	.....	4,790,350
Drill	10,422,309	.....	.....	8,426	.....	.....	.....	.....	.....	10,430,735
Tape and webbing	555,483	.....	.....	.....	.....	.....	.....	.....	.....	555,483
Miscellaneous	3,698,546	63,782	157,484	198,000	6,000	.....	.....	50,677	.....	4,174,483
Grand totals, cotton woven fabrics	106,536,443	27,173,773	33,804,709	12,286,687	4,202,172	264,917	825,092	22,657,547	11,605	207,762,945
COTTON KNIT FABRICS.										
Balbriggan	1,153	.....	.....	.....	.....	.....	.....	.....	.....	1,153
Cable net	2,250	.....	.....	.....	.....	.....	.....	.....	.....	2,250
Fleece	331,792	.....	.....	.....	.....	.....	.....	.....	.....	331,792
Jersey	76	.....	.....	.....	.....	.....	.....	.....	.....	76
Lining	38,948	.....	.....	.....	.....	.....	.....	.....	.....	38,948
Cotton net	2,517,989	.....	.....	.....	.....	.....	.....	.....	.....	2,517,989
Stockinette	221,870	.....	.....	.....	.....	.....	.....	.....	.....	221,870
Merino net	88,085	.....	.....	.....	.....	.....	.....	.....	.....	88,085
Wipers	2,614	.....	.....	.....	.....	.....	.....	.....	.....	2,614
Miscellaneous	299,579	.....	.....	.....	.....	.....	.....	.....	.....	299,579
Grand total, cotton knit fabrics	3,504,356	.....	.....	.....	.....	.....	.....	.....	.....	3,504,356
COTTON YARN AND CORD	26,466,567	18,321	2,780,775	765,004	465,193	.....	.....	472,950	103,095	31,071,905
Grand totals	136,507,366	27,192,094	36,585,484	13,051,691	4,667,365	264,917	825,092	23,130,497	114,700	242,339,206

The above consumption of cotton fabrics and yarn for the year 1917 was reported by 438 rubber manufacturers, including all principal companies.

HOLLANDS, 40-INCH:

Acme	yard	.23	@
Endurance	yard	.27½	@
Penn	yard	.30	@

OSNABURGS:

40-inch 2.35-yard	yard	.30¼	@
40-inch 2.48-yard		.29⅛	@
37½-inch 2.42-yard		.29¼	@

RAINCOAT FABRICS:

COTTON:

Bombazine 64 x 60 water-repellent	yard	.24	@
60 x 48 not water-repellent		.21	@
Cashmeres, cotton and wool, 36-inch, tan	yard	*.77½	@
cotton, blue and black		*.85	@
Oxford		.75	@
Twills 64 x 72		.34	@ .36
64 x 102		.39	@ .44
Twill, mercerized, 36-inch, tan and olive		*.35	@
blue and black		*.36	@
navy		*.37½	@
Tweed		.55	@ .70
printed		.20	@ .25
Plaids 60 x 48		.22	@
56 x 44		.21	@
Repp		.42	@ .49
Surface prints 60 x 48		.22½	@
64 x 60		.25	@

IMPORTED WOOLEN FABRICS SPECIALLY PREPARED FOR RUBBERIZING —PLAIN AND FANCIES:

63-inch, 3¼ to 7½ ounces	yard	1.30	@ 3.50
36-inch, 2¾ to 5 ounces		.75	@ 1.90

IMPORTED PLAID LINING (UNION AND COTTON):

63-inch, 2 to 4 ounces	yard	.90	@ 1.85
36-inch, 2 to 4 ounces		.55	@ 1.10

DOMESTIC WORSTED FABRICS:

36-inch, 4½ to 8 ounces	yard	.65	@ 1.20

DOMESTIC WOVEN PLAID LININGS (COTTON):

36-inch, 3¼ to 5 ounces	yard	.21	@ .32

SHEETINGS:

JACKET:

Delaware	yard	*.23	@
Schuylkill	yard	*.26	@

SILKS:

Canton, 38-inch	yard	*.38½	@
Schappe, 36-inch		*.63	@

TIRE FABRICS:

17¼-ounce Sea Island, combed	pound	1.45	@
17¼-ounce Egyptian, combed		1.20	@
17¼-ounce Egyptian, carded		*1.12	@
17¼-ounce Peelers, combed		*1.18	@
17¼-ounce Peelers, carded		.95	@

*Nominal.

TIRE FABRICS

JENCKES SPINNING COMPANY

PAWTUCKET RHODE ISLAND

AKRON OFFICE
407 Peoples Savings & Trust Co. Building.

EGYPTIAN COTTON CROP MOVEMENT.

FROM AUGUST 1, 1918, TO APRIL 16, 1919.

		1918-1919.	1917-1918.	1916-1917.
To Liverpool	bales	183,229	155,656	185,199
Manchester		91,087	91,597	120,868
Other United Kingdom ports		5,537	115,784	.....
Total shipments to Great Britain		279,853	363,037	306,067
To France		46,602	20,711	22,432
Spain		10,290	4,684	10,221
Italy		32,207	22,651	26,959
Switzerland		20,379	3,350	17,739
Russia		.....	.....	22,261
Greece		3,963	550	65
Total shipments to Continent		113,441	51,946	99,677
To India, Japan	11,517	11,517	12,464	9,205
To United States		45,954	38,763	105,215
Total shipments to all parts		450,765	466,210	520,164
Total crop (Interior gross weight), cantars[1]		.....	6,315,841	5,126,199

[1]A cantar equals 98 pounds.
(*Compiled by Davies, Benachi & Co.*)

THE MARKET FOR CHEMICALS AND COMPOUNDING INGREDIENTS.

NEW YORK.

PRONOUNCED STRENGTH and activity have characterized the base metal market during July. Lead and spelter have been in large demand and prices have advanced, resulting in a stronger market for lead pigments and zinc oxide.

Business in rubber chemicals and compounding ingredients has been fairly good for this time of the year, when the mills are not generally active. The indications point to an early resumption of contract business, due to the belief that production costs will be higher.

ANILINE OIL. The excellent domestic and foreign demand has resulted in increased prices, and producers predict a further advance.

BARYTES. The undertone has been firm, but to the active position of lithopone and the steady call from foreign sources. Prices have not changed.

BENZOL. The demand has been very active and visible supplies have been rapidly absorbed by foreign and domestic orders. Prices are firm and unchanged.

CARBON TETRACHLORIDE. There has been a surplus and a very quiet market, resulting in lower prices.

DRY COLORS. There has been a steady improvement in this market and prices are steady, due to the increasing cost of production. Iron blues were weak and lower early in the month, but rallied later.

LITHARGE. The active call for red lead is reflected in the strong undertone in the market for litharge. Prices are firm and unchanged.

LITHOPONE. This has been very active and producers are sold up to the end of the season. Prices are very firm and unchanged.

MAGNESIA.—Reports from California mines indicate a shortage of magnesia and a consequent higher schedule this autumn which will certainly influence Eastern prices of heavy calcined magnesia.

WHITING. The call for this material has been steady and producers have been able to supply the demand at unchanged prices.

ZINC OXIDE. All grades have been going well and leading producers announce there will be no price changes this year.

NEW YORK QUOTATIONS.

JULY 26, 1919.

Prices subject to change without notice.

ACCELERATORS, ORGANIC.

Accelerator N. C.	lb.	.50	@	
Accelerene	lb.	3.70	@	
Accelemal	lb.	.55	@	
Aldehyde ammonia crystals	lb.	1.00	@	1.25
Aniline oil	lb.	.24	@	
Excellerex	lb.	.85	@	
Hexamethylene tetramine (powdered)	lb.	.93	@	1.05
Paraphenylenediamine	lb.	3.50	@	
Tensolite	lb.	*.50	@	
Thiocarbanilide	lb.	.50	@	.55
Velocite	lb.	*.60	@	

ACCELERATORS, INORGANIC.

Lead, dry red (bbls.)	lb.	.10¼	@	
sublimed blue (bbls.)	lb.	.08¼	@	
sublimed white (bbls.)	lb.	.08¼	@	
white, basic carbonate (bbls.)	lb.	.09	@	
Lead, oleate	lb.	*.27	@	
Lime, flour	lb.	.01¼	@	
Litharge, domestic	lb.	.09¼	@	
imported	lb.	.12½	@	
sublimed	lb.	.10	@	
Magnesium, carbonate	lb.	.12½	@	
calcined heavy (Thistle)	lb.	.11	@	
light (Manhattan)	lb.	.35	@	
heavy	lb.	.07½	@	
light	lb.	.65	@	
Magnesium oxide	lb.	.24	@	
Magnesite	lb.	.04	@	.05

ACIDS.

Acetic, 28 per cent (bbls.)	cwt.	2.75	@	3.00
glacial, 99 per cent (carboys)	cwt.	12.00	@	12.44
Cresylic (97% straw color)	gal.	.90	@	
(95% dark)	gal.	.85	@	
Muriatic, 20 degrees	cwt.	1.25	@	1.50
Nitric, 36 degrees	cwt.	6.00	@	6.50
Sulphuric, 66 degrees	ton	16.00	@	20.00

ALKALIES.

Caustic soda, 76 per cent (bbls.)	lb.	.04¼	@	
Soda ash (bbls.)	lb.	.03½	@	

COLORS.

Black:

Bone, powdered	lb.	.03	@	
granulated	lb.	.09	@	
Carbon, black (sacks, factory)	lb.	.12	@	.18
Drop	lb.	.05½	@	.15
Ivory black	lb.	.16	@	.30
Lampblack	lb.	.15	@	
Oil soluble aniline	lb.	*.40	@	
Rubber black	lb.	.07	@	

Blue:

Cobalt	lb.	.25	@	.35
Prussian	lb.	.60	@	.70
Ultramarine	lb.	.24	@	

Brown:

Iron oxide	lb.	.04	@	
Sienna, Italian, raw and burnt	lb.	.04	@	.06
Spanish	lb.	.04¼	@	.04¾
Umber, Turkey, raw and burnt	lb.	.04	@	.06
Vandyke	lb.	.02½	@	.03½

Green:

Chrome, light	lb.	.35	@	.40
medium	lb.	.40	@	.50
dark	lb.	.50	@	.60
commercial	lb.	.07	@	.15
Oxide of chromium (casks)	lb.	.75	@	.85

Red:

Antimony, crimson, sulphuret of (casks)	lb.	.48	@	
crimson, "Mephisto" (casks)	lb.	*.55	@	
Antimony, golden sulphuret of (casks)	lb.	.24	@	
golden, "Mephisto" (casks)	lb.	*.28	@	
golden sulphuret (States)	lb.	.28	@	
red sulphuret (States)	lb.	.25	@	
vermilion sulphuret	lb.	.50	@	
Arsenic, red sulphide	lb.	.25	@	
Indian	lb.	.08½	@	
Toluidine toner	lb.	4.00	@	4.50
Iron oxide, reduced grades	lb.	.12	@	
pure bright	lb.	.16	@	
Spanish	lb.	.04	@	
Venetian	lb.	.03¾	@	
Oil soluble aniline, red	lb.	*1.80	@	
orange	lb.	*1.25	@	
Oximony	lb.	.18	@	
Vermilion, English, pale, medium, dark	lb.	1.63	@	
artificial	lb.	.35	@	.40

White:

Aluminum bronze, C. P.	lb.	.58	@	
superior	lb.	.55	@	
Lithopone, domestic	lb.	.07	@	.07½
Ponolith (carloads, factory)	lb.	.07	@	.07½
Rubber-makers' white	lb.	.06½	@	.06¾
Zinc oxide, Horsehead (less carload, factory):				
"XX red"	lb.	.09¼	@	
"Special"	lb.	.09¾	@	
French process, red seal	lb.	.09¾	@	
green seal	lb.	.10¾	@	
white seal	lb.	.11¾	@	
(States)	lb.	.08¾	@	
Azo, ZZZ, lead free (less carload factory)	lb.	.09¼	@	
ZZ, under 5% leaded (less carload factory)	lb.	.08¼	@	
Z, 8-10% leaded (less carload factory)	lb.	.08¼	@	

Yellow:

Cadmium, sulphide, yellow, light, orange	lb.	2.00	@	
red	lb.	1.85	@	
Chreme, light and medium	lb.	.27	@	
Ochre, domestic	lb.	.03	@	
imported	lb.	.04½	@	.05¼
Oil soluble aniline	lb.	*1.20	@	
Zinc chromate	lb.	.45	@	.48

COMPOUNDING INGREDIENTS.

Aluminum flake (bbls. factory)	ton	26.60	@	28.00
(sacks factory)	ton	23.75	@	25.00
Aluminum oxide	lb.	*.18	@	
Ammonia carbonate, powdered	lb.	.13¼	@	.13¾
Asbestine (carloads)	ton	25.00	@	
Asbestos (bags)	ton	35.00	@	
Avoilas compound	lb.	.15	@	
Barium, carbonate, precipitated	ton	55.00	@	
sulphide, precipitated	lb.	.07	@	
dust	lb.	.03¼	@	
Barytes, pure white	ton	35.00	@	
off color	ton	25.00	@	
uniform floated	ton	35.00	@	
Basofor	lb.	.04	@	
Blanc fixe	lb.	.04	@	
Bone ash	lb.	.05	@	
Chalk, precipitated, extra light	lb.	.05½	@	
precipitated, heavy	lb.	.03	@	.04
China clay, domestic	ton	25.00	@	
imported	ton	65.00	@	
Shawnee	ton	15.00	@	
Cork flour	lb.	.53	@	
Cotton linters, clean mill run, f. o. b. factory	lb.	.04	@	
Fossil flour (powdered)	ton	60.00	@	
(bolted)	ton	65.00	@	
Diatomite	lb.	.03	@	
Glue, high grade	lb.	.35	@	.40
medium	lb.	.16	@	.28
low grade	lb.	.12	@	.15
Graphite, flake (400-pound bbl.)	lb.	.10	@	.25
amorphous	lb.	.04	@	.08
Ground glass FF. (bbls.)	lb.	.03	@	
Infusorial earth (powdered)	ton	60.00	@	
(bolted)	ton	65.00	@	
Mica, powdered	lb.	.03½	@	.06
Pumice stone, powdered (bbl.)	lb.	.05	@	.08
Rotten stone, powdered	lb.	.02½	@	.04½
Rub-R-Glu	lb.	*.20	@	.25
Silex (silica)	ton	22.00	@	40.00
Starch, powdered corn (carload, bbls.)	cwt.	6.24	@	
(carload, bags)	cwt.	6.02	@	
Talc, powdered soapstone	ton	20.00	@	
Tripoli earth, air-floated	ton	25.00	@	
Tyre-lith	ton	85.00	@	

Whiting, Alba (carloads)	cwt.	.80	@	.90
Columbia	cwt.	.80	@	
commercial	cwt.	1.25	@	1.30
English cliffstone	cwt.	1.75	@	2.00
gilders	cwt.	1.30	@	1.35
Paris, white, American	cwt.	1.50	@	1.75
Quaker	cwt.	.70	@	.80
Wood pulp, imported	lb.	.03½	@	
Wood flour, American	lb.	.01¾	@	

MINERAL RUBBER.

Gilsonite	ton	47.50	@	57.50
Genasco (carloads factory)	ton	55.00	@	
(less carloads factory)	ton	57.00	@	
Hard hydrocarbon	ton	30.00	@	
K-X	ton	90.00	@	
K. M. R.	ton	40.00	@	60.00
M. R.	ton	*65.00	@	
M. R. X.	ton	100.00	@	
Pioneer, carload, factory	ton	50.00	@	
less carload, factory	ton	55.00	@	
Raven M. R.	ton	.50	@	.70
Refined Elaterite	ton	175.00	@	
Richmond	ton	75.00	@	
No. 64	ton	55.00	@	
318/320 M. P. hydrocarbon	ton	50.00	@	55.00
Robertson M. R. Special (carloads, factory)	ton	80.00	@	
M. R. (carloads, factory)	ton	55.00	@	
M. R. (less carloads, factory)	ton	60.00	@	
Rubpron (carloads, factory)	ton	50.00	@	
(less car, factory)	ton	60.00	@	
Walpole rubber flux (factory)	lb.	.05	@	

OILS.

Castor, No. 1, U. S. P.	lb.	.22	@	
No. 2, U. S. P.	lb	*23	@	
No. 3, U. S. P.	lb.	.20	@	
Corn, refined Argo	cwt.	28.56	@	
Cotton	lb.	.27	@	
Glycerine (98 per cent)	lb.	.21	@	
Glycerole	lb.	.55	@	
Linseed, raw (carloads)	gal.	2.17	@	
Linseed compound	gal.	*.85	@	
Palm (Niger)	lb.	.18	@	
Peanut	gal.	2.15	@	
Petrolatum	lb.	.06¼	@	
Petroleum grease	lb.	.04¾	@	
Pine, steam distilled	gal.	.76	@	.78
Rapeseed, refined	gal.	1.60	@	
blown	gal.	1.70	@	
Rosin	gal.	.93	@	1.17
Soya bean	lb.	.20	@	
Tar	gal.	.40	@	.46

RESINS AND PITCHES.

Cantella gum	lb.	.60	@	
Tar, retort	gal.	.28½	@	
kiln	gal.	.25	@	
Pitch, Burgundy	lb.	*.07½	@	
coal tar	lb.	.02½	@	
pine tar	lb.	.04½	@	
ponto	lb.	*.14	@	
Resin, Pontianak, refined	lb.	None		
granulated	lb.	None		
fused	lb.	None		
Rosin, K.	bbl.	20.80	@	
powdered	lb.	*.17	@	
Shellac, fine orange	lb.	1.15	@	

SOLVENTS.

Acetone (98.99 per cent drums)	lb.	.14	@	
methyl (drums)	gal.	1.10	@	
Benzol, water white	gal.	.23½	@	.27
Beta-naphthol, resublimed	lb.	1.00	@	1.10
ordinary grade	lb.	.46	@	.48
Carbon bisulphide (drums)	lb.	.06½	@	.07
tetrachloride (drums)	lb.	.11⅞	@	
Naphtha, motor gasoline (steel bbls.)	gal.	.24½	@	
73 @ 76 degrees (steel bbls.)	gal.	None		
68 @ 70 degrees (steel bbls.)	gal.	None		
Solvent	gal.	.20	@	
V. M. & P. (steel bbls.)	gal.	.23½	@	
Toluol, pure	gal.	.24	@	.28
Turpentine, spirits	gal.	1.35	@	
wood	gal.	1.30	@	
Osmaco reducer	gal.	.30	@	
Xylol, pure	gal.	.35	@	.40
commercial	gal.	.30	@	.35

SUBSTITUTES.

Black	lb.	.11	@	.20
White	lb.	.13	@	.24
Brown	lb.	.16	@	.23
Brown factice	lb.	.10	@	.22
White factice	lb.	.11	@	.22
Paragol soft and medium (carloads)	cwt.	20.58	@	
hard	cwt.	21.08	@	

VULCANIZING INGREDIENTS.

Lead, black hyposulphite (Black Hypo)	lb.	.52	@	.56
Orange mineral, domestic	lb.	.13¼	@	
Sulphur chloride (drums)	lb.	.06½	@	
Sulphur, flour, Brooklyn brand (carloads)	cwt.	2.90	@	
pure soft (carloads)	cwt.	2.90	@	
superfine (carloads, factory)	cwt.	2.50	@	

(See also Colors—Antimony)

WAXES.

Wax, beeswax, white	lb.	.68	@	
ceresin, white	lb.	.16	@	.20
carnauba	lb.	.62	@	
ozokerite, black	lb.	.60	@	
green	lb.	.78	@	.80
montan	lb.	.35	@	
substitute	lb.	.20	@	.32
paraffine, refined 118/120 m. p. (cases)	lb.	.09¼	@	
123/125 m. p. (cases)	lb.	.09¼	@	
128/130 m. p. (cases)	lb.	.10¼	@	

*Nominal.

THE MARKET FOR RUBBER SCRAP.

NEW YORK.

BUSINESS IN THE RUBBER SCRAP MARKET has been of the mid-summer variety with the demand centered on boots and shoes and tires for rebuilding. England has removed the embargo on rubber scrap and earlier in the past month there was a movement of inner tubes for export but the volume was small. The low prices ruling in crude rubber and the consequent apathy of the reclaimers are sufficient reasons for the quiet conditions in the rubber scrap market.

Circular E, the new standard of packing adopted by the Scrap Rubber Division on June 17, is printed elsewhere in this issue.

BOOTS AND SHOES. Excepting a few unfilled orders from reclaimers, the market for boots and shoes has been practically at a standstill. Quotations are nominally 8¼ cents delivered.

TIRES. These grades have been without interest other than the call for picked tires. A fair demand from reclaimers was reported during the month, but the movement subsided later.

INNER TUBES. Nothing of interest to report on tubes. The export demand that was noted about the middle of the month has apparently been satisfied.

QUOTATIONS FOR CARLOAD LOTS DELIVERED.

JULY 26, 1919.

Prices subject to change without notice.

BOOTS AND SHOES:

Arctic tops	lb.	*.01	@	
Boots and shoes	lb.	*.08⅛	@	
Trimmed arctics	lb.	*.06½	@	.06⅜
Untrimmed arctics	lb.	*.05⅜	@	

HARD RUBBER:

Battery jars, black compound	lb.	*.01	@	
No. 1, bright fracture	lb.	.23	@	.24

INNER TUBES:

No. 1, old packing	lb.	*.19	@	.20
No. 2	lb.	*.10½	@	.10¾
Red	lb.	*.10	@	.10½

MECHANICALS:

Black scrap, mixed, No. 1	lb.	*.03½	@	.04
No. 2	lb.	*.03	@	
Car springs	lb.	*.03½	@	.04
Heels	lb.	*.03	@	.03½
Horse-shoe pads	lb.	*.03	@	.03½
Hose, air brake	lb.	.04¼	@	
fire, cotton lined	lb.	.01½	@	.01¾
garden	lb.	.01½	@	.01¾
Insulated wire stripping, free from fiber	lb.	*.03½	@	.04
Matting	lb.	*.03½	@	.04
Red packing	lb.	.05½	@	.06
Red scrap, No. 1	lb.	.09	@	.10
No. 2	lb.	.06¾	@	.07¼
White scrap, No. 1	lb.	.10	@	.11
No. 2	lb.	.08	@	.09

TIRES:

PNEUMATIC—

Auto peelings, No. 1	lb.	.07	@	.08
No. 2	lb.	.05	@	.05½
Bicycle	lb.	.03	@	.03¼
Standard white auto	lb.	.04¾	@	.05
Standard mixed auto	lb.	.04	@	
Stripped, unguaranteed	lb.	.03	@	
White, G. & G., M. & W., and U. S.	lb.	.05	@	.05½

SOLID—

Carriage	lb.	.04	@	.04½
Irony	lb.	.01	@	
Truck	lb.	.04	@	.04¼

*Nominal.

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